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MANAGEMENT OF PULMONARY DISEASE IN THE FORCES

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It is somewhat peculiar that the subject of pulmonary disease other than tuberculosis in members of H.M. Forces has not received more attention. The main purpose of the clinical sections of the Army Medical Services must be to return the sick soldier to health and duty in as short a time as possible. Such diseases as tuberculosis and peptic ulcer, and many cases of effort syndrome, although of great clinical interest and much written about, must eventually render the soldiers so affected unfit for further military service or at best fit for service in only a limited capacity. The acute non-tuberculous pulmonary affections, however, should be capable of complete cure in a large proportion of cases, and even the chronic varieties, if properly managed, should not be incompatible with a high degree of functional efficiency. Furthermore, with the exception of the dyspepsias, pulmonary diseases form the largest group admitted to the medical wards. This group is therefore of considerable importance to all who have to deal with sick soldiers, whether it be in the form of diagnosis, treatment, or the management of convalescence, the last especially being more complex in the Services than among civilians.

The experience of one military hospital in dealing with pulmonary disease over a period of 12 months (Oct., 1940, to Oct., 1941) may be of some interest. During this period 329 patients with respiratory disease were admitted to and discharged from the medical wards, exclusive of cases complicating or occurring in the course of surgical treatment. Table I summarizes the numbers, average ages, length of service, duration in hospital, and disposal of such patients. The incidence of the various diseases in a hospital is not, of course, a true reflection of their actual incidence in the Army: many cases of upper respiratory infection and acute bronchitis are successfully treated in smaller medical units; many chronic bronchitics and asthmatics do not and should not require hospital treatment. On the other hand, patients suffering from pneumonia should all be transferred to hospitals where trained nursing care, so important in such cases, is available. The incidence of pulmonary tuberculosis will appear high in this series because this hospital acts as a clearing-house for such cases over a wide area, many patients being transferred here from E.M.S. hospitals, etc., before discharge to civil sanatoria. It is proposed, for purposes of discussion, to divide this series into groups, in which the diseases have some clinical, pathological, or therapeutic relation, and to concentrate on aspects especially important to the Service M.O.

TABLE I.—*Summary of Respiratory Diseases in 12 Months in Military Hospital*

Type of Disease	No. of Cases	Aver. Age (Yrs.)	Aver. Service (Yrs.)	Aver. Dur. in Hosp. (Days)	R.T.U.	Cat. E	Died
Upper respiratory infections	44	28	1 11/12	9	44	0	0
Acute bronchitis	38	30	2 9/12	16	38	0	0
Chronic bronchitis	23	36	2 11/12	16	17	5	1
Bronchiectasis	8	28	11/12	22	4	4	0
Lobar pneumonia	41	26	2 1/12	26	40	1*	0
Pneumonitis	12	27	1 1/12	26	12	0	0
Bronchopneumonia	8	40	8 3/12	43	5	2	1
Atypical pneumonia	2	33	3 3/12	67	1	0	1
Lung abscess	2	24	1 3/12	54	1	1*	0
Chronic phthisis	64	31	2 2/12	N.S.	0	61	3
Arrested phthisis	4	26	9/12	N.S.	0	4	0
Primary tuberculous complex	1	30	4/12	46	1	0	0
Tubercle bacilli carrier	1	30	8/12	N.S.	1	0	0
Pleurisy with effusion	25	25	1 4/12	N.S.	4	21	0
Sulphapyridine effusion	3	22	1 4/12	46	3	0	0
Pulmonary fibrosis	30	31	4 5/12	25	26	4	0
Silicosis	3	38	10/12	16	0	3	0
Bronchial asthma	10	27	2 8/12	18	9	1	0
Carcinoma of lung	4	49	1 8/12	N.S.	0	2	2
Mediastinal lympho-sarcoma	1	26	6/12	N.S.	0	0	1
Spontaneous pneumo-thorax	3	35	1 2/12	25	3	0	0
Bronchial haemangioma	1	41	27	63	0	1	0
Congenital cystic disease	1	30	1 1/12	25	1	0	0
Total	329 100%				210 63·9%	110 33·4%	9 2·7%

* Discharged on account of duodenal ulcer.
N.S. = Duration in hospital not of clinical significance.

Upper Respiratory Infections, Acute Bronchitis, Chronic Bronchitis, and Bronchiectasis

Upper respiratory infections (viz., common cold, laryngitis, tracheitis, etc.) and acute bronchitis are bacteriologically and pathologically different stages of the same disease. The clinical distinction is important because it is seen from Table I that acute bronchitis, as would be expected, necessitates a considerably longer stay in hospital. Furthermore, when abnormal physical signs appear in the lungs convalescence must be more carefully controlled if chronic bronchitis is to be avoided: thus patients with upper respiratory infections were usually fit to return to duty from hospital, whereas acute bronchitis entailed convalescence in B.R.C.S. hospitals or convalescent depots. It should rarely be necessary for a soldier to be off duty longer than 30 days because of acute bronchitis, and often a shorter period will suffice. In the case of a first attack of acute bronchitis the previously A1 man should not, however, be returned to duty until his lungs are quite free from abnormal physical signs. If convalescence should be delayed the possibility of complication by a more serious disease should be remembered and special investigation be undertaken.

Chronic bronchitis in the Army, as in civil life, is not uncommon among older men (over 35), and I have been surprised by the frequency with which even men in their twenties have been found to suffer from this disease, often the result of repeated attacks of winter bronchitis which has been neglected. The chronic bronchitic is, of course, more likely to report sick in the winter than in the summer, and may require a short stay in hospital from time to time. Usually, however, the chronic bronchitic does not need or benefit by hospital treatment, and the great majority (Table I) are fit for duty, sometimes of a quite arduous nature; in fact, Army life is often good treatment for such patients, with its adequate food, open-air life, and well-regulated activities, and they are frequently better off in the Army than in civil life as road labourers, miners, builders' labourers, shipyard workers, etc. Causes of real incapacity indicating discharge are emphysema, cardiac insufficiency, and associated disease—e.g., arteriosclerosis, chronic alcoholism, obesity, chronic nephritis, etc. The one death in this series was that of a man of 45 with marked emphysema and cardiac failure who should not have been enlisted 5 months previously.

Bronchiectasis is an indication for discharge if it conforms to the classical description, with fetid sputum, etc.; but the greater frequency of lipiodol investigation is revealing more mild cases of bronchiectasis: such cases are fit for useful military service in the lower medical categories. There were 4 of these mild cases out of the 8 in this series (Table I).

Lobar Pneumonia, Pneumonitis, Bronchopneumonia, and Atypical Pneumonia

This group differs from the previous one in that the diseases in the latter can normally be successfully treated in small medical units, whereas those now under discussion often require the technical facilities of a hospital for their precise diagnosis and treatment, and patients so affected should always receive the inestimable advantage of *trained* nursing.

Lobar Pneumonia

The present series included 41 cases of typical lobar pneumonia (Table I). All had unequivocal physical signs, and *x*-ray confirmation was obtained in many; rusty sputum and herpes frequently lent additional evidence. There were no deaths in this series, and one patient was discharged from the Army on account of duodenal ulcer of long standing, having recovered from his pneumonia. *X*-ray evidence of complete resolution was obtained in each case before final return to duty was advised. Comparison of mortality rates in the many series published is not possible, as various factors are involved—e.g., age incidence, day of disease on admission, type of pneumococcus, associated disease, etc.—and the same applies to the incidence of complications. One of the lowest mortality figures recorded was Gaisford's (1940) series, in which 8 (1.4%) died out of 569 patients under 50 years old. All my patients were under 50 years, and, as would be expected, the incidence of associated disease was very low; furthermore, the sick soldier reaches hospital at an earlier stage of his illness than his civil counterpart. Even so, 41 complete recoveries in 41 lobar pneumonias represents a great advance on results possible in prechemotherapy days. Gaisford's mortality figures for similar groups of cases in the two years preceding the use of sulphapyridine were 13.6% and 15.5% respectively. Although the sputum was often cultured in my series, typing was not possible. The frequency with which the different lung lobes were involved was: right lower, 20 cases; right middle, 1; right upper, 1; left lower, 16; two lobes (one lung), 2; two lungs, 1.

Sulphapyridine was given to 36 of the 41 patients; the other 5, admitted late in the disease, were obviously going to recover spontaneously. Fluids and glucose by mouth were pushed, and oxygen by B.L.B. mask and sedatives were used when necessary. Cardiac stimulants and poultices were not employed. Morphine in doses of 1/6 to 1/4 grain was used for pain, and was found very satisfactory; it was often given on the first two nights in hospital in the absence of cyanosis. Alcohol was not used, although its value in older patients and chronic alcoholics is recognized. The only dietary restrictions were those indicated by the patient's condition. The dosage of sulphapyridine and methods of administration vary greatly in different published series—e.g., approximately 15 gm. in 3.5 days (Gaisford, 1940); 17.5 gm. in 4.5 days (Smith, Riley, and Jones, 1940); 50 gm. in 10 to 11 days (Snodgrass and Markson, 1941); 49 gm. in 6 to 8 days (Anderson and Cairns, 1940). In the present series the dosage was based on the following principles: the blood level was raised rapidly by heavy early dosage, including two "loading" doses; the blood level was maintained at a regular figure by administration at four-hourly intervals day and night throughout. Serious toxic effects are more likely with prolonged minimal dosage than when a heavy dosage is employed over a short period—e.g., 4 to 6 days. Thus 8 to 9 gm. was given in the first 24 hours, 6 gm. in each 24 hours thereafter until the temperature had settled for 24 to 36 hours, and then 3 gm. in 24 hours for the next 36 to 48 hours. The average dose for the 36 cases was 25 gm. in 5 days. The rapid response of the temperature, pulse, and respirations, with improvement in general condition, originally described by Evans and Gaisford (1938) was obtained in every case. The only toxic effects of sulphapyridine were the characteristic cyanosis, which is not of importance, and nausea and vomiting, which were never such as to necessitate discontinuance of the drug by mouth. Blood changes, haematuria, and drug fever were not seen. A morbilliform rash appeared in one case at the end of the treatment.

The complications of lobar pneumonia were as follows: pleural effusion (sterile), 3; empyema, 1; haemoserothorax, 1; corneal ulcer. 1. In 35 cases (85.4%) there was uneventful resolution. The clear sterile effusions, regarded by Gaisford (1940) as representing aborted empyemata, cleared with two or three taps, their only deleterious effect being to delay final recovery. The case of empyema (due to pneumococcus) cleared up with repeated aspiration alone, a course of sulphathiazole after the sulphapyridine being without obvious effect; this patient was finally discharged on convalescence after 76 days in hospital. The dendritic corneal ulcer necessitated 65 days' stay in hospital although the pneumonic process cleared rapidly. The case of haemoserothorax was remarkable.

The man was admitted on March 20, 1941, with lobar pneumonia (L.L.L.), which responded rapidly to 22 gm. of sulphapyridine over the next 4 days. A radiograph on April 1 showed complete resolution. He was up and about prior to discharge, when on April 7 he developed a temperature of 103.5° F., with dullness and defective breath sounds in the left base, but at no time did he again appear very ill: these signs disappeared by April 10. On April 20 he again had dullness in the left base and a mild fever (100° F.). Chest exploration on the 26th and 28th produced 20 oz. and 50 oz. respectively of deeply blood-stained fluid, which was sterile and contained (on standing) an excess of lymphocytes. Thereafter the patient completely recovered without further treatment and was discharged, radiologically clear, 89 days after admission. The aetiology of this haemoserothorax, occurring after radiological proof of resolution and without further sulphapyridine, is mysterious.

Pneumonitis

During the twelve months 12 cases were seen (Table I) which appeared to be identical with cases described by Gill (1938) and Beaumont (1937) as "pneumonitis" and by Ramsay and Scadding (1939) and Scadding (1939) as "benign circumscribed pneumonia." The clinical picture is variable, but it is characterized by the moderate constitutional upset, appearance of *x*-ray shadows, and usually rapid recovery. The onset as a rule is subacute, with some malaise, cough, and sputum that may be blood-streaked, undue dyspnoea on exertion, loss of weight, and tachycardia. Fever is normally low, although occasionally a brisk reaction is seen, and there may be pain in the chest. Unlike lobar pneumonia, there is no respiratory distress at rest. Physical signs are impairment of percussion note, defective air entry or occasionally tubular sounds, and scanty fine rales, localized to one or two distinct areas. Sometimes abnormal physical signs are absent, the condition being diagnosed by *x*-ray opacities. All my cases had characteristic physical signs and recovered in a short period; it is probable that some of those without clinical signs were missed. Treatment was conservative in all instances, by rest, expectorants, etc., and there were no complications. The distribution of the disease in the 12 cases was: R.L.L., 6 cases; R.M.L., 1 case; L.L.L., 4 cases; L.U.L., 1 case.

The main importance of such cases lies in the differential diagnosis. From the above description the similarity in symptomatology to pulmonary tuberculosis will be obvious. Although the prominence of catarrhal symptoms and absence of tubercle bacilli from the sputum are a clue, in many cases ultimate diagnosis must await the benign course of the illness and complete disappearance of the *x*-ray shadows characteristic of "pneumonitis." The diagnosis will be particularly difficult in the initial stages when the localized *x*-ray opacity is in the upper zone of a lung. Other conditions may simulate "pneumonitis": delayed resolution of lobar pneumonia may produce an identical *x*-ray appearance, but the history of a preceding acute illness will differentiate the two conditions; transient lobar collapse, although rare, will be clinically similar, but the typical "jib-sail" basal shadow (of collapse) lying alongside the heart shadow will not be confused with the more diffuse opacity of "pneumonitis."

Two other little-recognized conditions, which in the early stages are indistinguishable from simple "pneumonitis" and are probably really more severe forms of the same condition, are "chronic circumscribed pneumonia" and "chronic suppurative pneumonia" (Scadding, 1939). In them the *x*-ray opacities persist for a very long time—abscess formation ultimately occurring in the latter—and they may leave behind permanent fibrosis, which does not result from "pneumonitis." One of the 2 cases in my series under the heading "Atypical Pneumonia" (Table I) was of this type of chronic pneumonia.

A man aged 42 was admitted with cough, sputum, and undue dyspnoea on exertion, having lost weight rapidly. Radiographs showed several fairly dense circumscribed opacities in each lung strongly suggestive of tuberculosis. Sputum examinations were

repeatedly negative. With rest, expectorants, adexolin, and open-air nursing the patient was returned to duty 68 days later physically fit, and radiologically the appearances of the lungs had become completely normal.

This group of cases has been discussed at some length because, while it is obviously desirable that soldiers suffering from pulmonary tuberculosis should be discharged to civil sanatoria as soon as possible, it is just as desirable that cases of "pneumonitis" should not be so discharged when complete recovery can be confidently predicted.

Bronchopneumonia and Atypical Pneumonia

Of the 8 cases of bronchopneumonia in this series (Table I) 7 occurred in chronic bronchitics, and it is to be expected that one death should occur and that two patients be rendered unfit for further service. The use of sulphapyridine and/or sulphathiazole was always associated with improvement, often to a marked degree, but the dramatic response obtained in lobar pneumonia did not occur. The eighth case was apparently of primary bronchopneumonia in a V.A.D. aged 26, producing high fever, moderate dyspnoea at rest, and fairly dense migratory *x*-ray shadows in both lungs, with associated clinical signs; the course of the illness, lasting 31 days, was uninfluenced by sulphanilamide and sulphathiazole, but complete clinical and radiological recovery ensued. The relation between this case and "pneumonitis" is probably one of degree.

One case of atypical pneumonia has already been referred to; the other case (Table I) was a metastatic bronchopneumonia from the recrudescence of an old staphylococcal osteomyelitis of the femur in a man who died apparently of septicaemia although blood culture was sterile; there was no radiographical evidence of actual abscess formation in the lungs, nor was the sputum abundant. The patients of this group should all be sent to a convalescent hospital and/or convalescent depot.

Uncomplicated cases of lobar pneumonia and "pneumonitis" should rarely cause absence from duty longer than 50 days, and some will be fit in a shorter period. The healthy young soldier does not require prolonged convalescence from an acute self-limited illness.

Chronic Phthisis, Arrested Phthisis, and Primary Tuberculous Complex, etc.

In this group of diseases the Army M.O.'s main interest must be early accurate diagnosis; questions of treatment, apart from the amelioration of urgent symptoms, must be left to the civil authorities, to whom each case should be transferred as soon as the diagnosis is made. Before discussing the problems of diagnosis it may be mentioned that to diagnose the presence of active tuberculosis when it is in fact absent is almost as serious a mistake as to miss its presence or to fail to investigate the possibility when it arises: both may cause serious injury to the patient—one perhaps impairing his chances in the world, the other leading him to an incurable stage of disease.

The soldier suffering from active chronic phthisis will first be seen by the unit M.O., on whom falls the onus of early diagnosis. The unit M.O. has to rely on clinical methods only, and his success in spotting the early case will depend largely on a careful present and previous case history along with his personal knowledge of the man. Table II shows the frequency with

TABLE II.—*Previous History in 64 Cases of Tuberculosis*

Pleurisy with effusion	8 cases (12·5%)
Pneumonia	4 „ (6·3%)
Pulmonary tuberculosis	4 „ (6·3%)
Spontaneous pneumothorax	1 case (1·6%)
Family history of pulmonary tuberculosis	15 cases (23·4%)

which a possibly significant previous history was obtained in the 64 active cases of this series; pleurisy with effusion is of great significance, but "pleurisy" alone may mean anything from a "stitch" to pneumonia. Haemoptysis had occurred in 10 of the 64 cases before admission. Careful physical examination is of the utmost importance, significant findings being tachycardia at rest, evening pyrexia, evidence of recent loss of weight, pallor, and unusual lassitude in a man previously known to be an active soldier. Abnormal physical signs in the lungs will of course at once arrest attention, but they have "inherited a position to which they are not entitled, and it cannot be too strongly emphasized that when they are present the case is probably more advanced than they seem to indicate, and, equally, their absence is not evidence of absence of disease" (Fenton and Burrell, 1930).

Active disease being suspected, the soldier should be referred to a medical specialist, who will, in addition to clinical methods, employ radiography, sputum examinations, sedimentation rates, and possibly blood examination, lipiodol, bronchoscopy, etc., for purposes of differential diagnosis. In the present series radiographs gave positive evidence of some abnormality in every case. The extent of lung involvement when the cases were first seen was: one lung, one lobe, 13 (20.3%); one lung, two or three lobes, 7 (10.9%); bilateral, two or more lobes, 44 (68.8%). The sputum was positive in 49 (76.6%) and negative in 15 (23.4%); the sedimentation rate was raised in 58 (90.6%) and normal in 6 (9.4%). In only 3 cases (4.7%) were positive *x*-ray findings associated with normal sedimentation rate and negative sputum examinations; it is in this small group that difficulty may arise, and the case history, physical examination, and radiographs should be considered very carefully by the physician in consultation with the radiologist. It may be necessary in a few cases to make repeated examinations for a period of time, but in the great majority a definite diagnosis is possible after 7 to 10 days in hospital: it is most unwise to commit oneself to a definite positive diagnosis without the help of hospital observation.

Of the 4 quiescent cases 3 had previously had sanatorium treatment, which fact the men withheld on enlistment, one actually entering the Army with a satisfactory artificial pneumothorax; in the fourth case a radiograph revealed much calcification and fibrosis in the upper zone. A few small scattered calcium opacities in the lung fields and hilar regions are, of course, not significant in the absence of other evidence.

One man showed a primary tuberculous infection of childhood type with Ghon's focus and mediastinal glands, which returned to normal after a period of rest and open-air nursing. No doubt primary infection is not uncommon in soldiers from sparsely populated areas, and, as in childhood, will usually pass unnoticed by the patient himself.

One man was labelled a "tuberculosis carrier" although it is realized that a small focus of lung disease must almost certainly have been present. A young officer who looked and felt extremely fit coughed up some scanty blood-stained sputum for 2 weeks; a very few tubercle bacilli were found after prolonged search by an enthusiastic laboratory technician on 4 out of 5 occasions, and the bacilli were cultured During the 4 months he was kept off duty repeated radiographs and sedimentation rates were normal; cough and sputum were absent after the initial 2 weeks; guinea-pig inoculation was negative, and his weight remained as it had been for some years. He returned to duty, and 10 months after first being seen was completely well.

Pleural Effusions

Under this heading are included only cases of pleurisy with effusion presumed in the absence of other discoverable cause to be tuberculous, and 3 cases admitted with sterile effusion after treatment of recent pneumonia with sulphapyridine (Table I). Pleural effusion complicating phthisis (2 cases) and malignant disease (2 cases) are included in those sections.

Pleurisy with effusion is not difficult to diagnose clinically, but aspiration of the fluid should always be done not only to confirm diagnosis but also to determine the nature of the fluid and the cause of the effusion—often impossible on clinical examination alone.

The treatment of such tuberculous cases should wherever possible be conservative, any needling being confined to aspiration of only enough fluid for pathological examination. General measures should include open-air nursing whenever possible, high-calorie diet, and vitamins A and D in large doses. I find the sedimentation rate a better guide than *x*-ray examinations as to when to allow the patient up. Often the fluid is absorbed while the sedimentation rate remains elevated, and to permit the patient to be up and about freely at this stage is going too fast. Of course, in certain cases larger aspirations are necessary—e.g., if the fluid reaches the level of the second rib, if the mediastinum is grossly displaced, if dyspnoea is urgent, or if absorption is delayed longer than three weeks—even then only some of the fluid should be removed; under such circumstances air replacement may be done if apparatus is available. Of the 25 cases of this series conservative treatment was given in 17, aspiration was done in 6, and 2 had air replacement.

The final results obtained in these 25 cases of pleurisy with effusion were: complete resolution, 11; inactive pleural fibrosis, 12; activity—sanatorium, 2. The average stay in hospital is not significant, as some cases were transferred to sanatoria or civil hospitals after discharge from the Army. The disposal of such cases presents a difficult problem. It is of course known that people so affected ultimately develop pulmonary tuberculosis more often than the general population, but how often is unknown. The ultimate prognosis in adults is worse than in children: Graham (1925) traced 39 out of 56 children and found that 7 had developed tuberculosis. Vaizey and Perry (1940) found 1 child with pulmonary tuberculosis out of 33; on the other hand, they estimate that at least 30% of adults with tuberculous pleurisy ultimately develop lung disease. Kallner (1937) from a large series gives a tuberculosis morbidity figure of 39%, and concluded that tuberculosis was as common in those who had had sanatorium treatment as in those who had not. The patient recovered from tuberculous pleurisy should have a period of regulated living, fresh air, good food, and periodic medical observation; such is supplied to the full by service in the Army in one of the lower medical categories. A good rule would seem to be that the man with a small effusion which completely absorbs should be retained after an adequate convalescence (2 to 3 months off duty), whereas the large effusion or one which takes a long period to resolve, leaving much pleural thickening, should be considered a bar to further service. In future I shall advise the retention of a higher percentage of cases than in the present series.

"Sulphapyridine effusions" are mentioned only to stress the need for care in diagnosis. 2 of the 3 cases were referred to this hospital as tuberculous when the history made it clear they were in fact complications of pneumonia. The diagnosis is important, as treatment is by complete and, if necessary, repeated aspiration, and rapid recovery can be anticipated. Equally is it important to ensure that a pleural effusion diagnosed in a case on sulphapyridine is not a tuberculous one mistaken originally for pneumonic consolidation; in one such case, seen after completion of this series, unduly hurried convalescence had resulted in the development of miliary tuberculosis.

Miscellaneous Diseases

Under this heading a few notes are given below on some of the remaining diseases included in Table I.

Pulmonary fibrosis is of course a group of diseases: the cause of this condition in the 30 cases of this series was: bronchitis, 13; pneumonia, 8; lung abscess, 1; pleural effusion and haemothorax, 2; anthracosis, 1; hilar tuberculosis, 1. In 4 cases the cause was unknown. The disposal of such cases will naturally depend partly on the aetiology and partly on the presence or otherwise of cardiac insufficiency or severe lung damage. The term "fibrosis" has been reserved here for cases in which the radiograph showed a marked departure from normal. Even so, it was possible to retain 26 of these men in some capacity, often quite a strenuous one.

Bronchial asthma is rarely incompatible with useful military service. Indications for discharge are frequent severe attacks and definite secondary emphysema. The diagnosis should not be made on the history alone without accompanying physical signs of bronchospasm or emphysema. Two cases with a typical history of "asthmatic attacks" were seen in hospital in such attacks, which were manifestly hysterical and during which the absence of physical evidence was conclusive; a simple explanation resulted in the cessation of the attacks in both cases.

The 3 cases of spontaneous pneumothorax were benign—that is, investigation failed to reveal any evidence of pulmonary disease. One man was having his second pneumothorax in five years. Perry (1939) in 114 cases found that 70% were benign. My 3 patients recovered completely and returned to full duty on expectant treatment.

Bronchial haemangioma was the tentative diagnosis in a case in which there were frequent repeated moderate haemoptyses over a period of 18 months: radiographs, lipiodol, and several bronchoscopies failed to reveal the cause.

Of the lung abscesses, one complicated a pneumococcal pneumonia and one a post-operative streptococcal pneumonia treated elsewhere with sulphapyridine in insufficient dosage. Both recovered with medical treatment, with the spontaneous evacuation of large amounts of pus by the bronchi, which was singularly fortunate. One man, although radiologically clear, was discharged from the Army because of a duodenal ulcer, the perforation of which had necessitated operation.

Summary

In 12 months 329 cases of respiratory disease were seen in the medical wards of a military hospital.

The aspects important to the Army M.O. in each group are discussed, with suggestions on treatment and disposal of such cases.

With the exception of tuberculosis, the great majority of soldiers with pulmonary disease can be returned to duty as useful men.

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PORPHYRINURIA IN TRINITROTOLUENE POISONING

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The traces of coproporphyrin excreted in health are so minute that for clinical purposes it may be accepted that porphyrins do not occur in normal urine. Any increased urinary excretion is termed "porphyrinuria," and the porphyrins present may be coproporphyrin or uroporphyrin, or both. The colour of the urine is no guide to their presence. Of 597 urines found to contain recognizable porphyrins only 61 (approximately 10%) were dark in colour—deep amber to mahogany brown—but these contained bile pigments as well, and none of the others turned dark on standing.

Increased porphyrin excretion denotes some disturbance of pigment metabolism and occurs in a variety of conditions, especially in diseases associated with disorder of liver function or of haemopoiesis, or of both. Dobriner, Rhoads, and Hummel (1938), studying the porphyrin excretion in aplastic anaemia, concluded that the pigment metabolism therein is similar to that in certain liver diseases and in lead and salvarsan poisoning, but different from that in pernicious anaemia or haemolytic jaundice. Rhoads and Barker (1938) in their review found that of 60 so-called primary cases of aplastic anaemia 27 gave a history of exposure to chemical compounds that might be haematologically toxic—e.g., benzene and arsphenamine. Porphyrinuria sometimes follows the long-continued use of such drugs as sulphonal, trional, veronal, etc., and Brownlee (1939) showed that it may result from the antipyretics—acetanilide, phenacetin, phenazone, amidopyrine, aspirin, and *p*-aminophenol. Toxic symptoms occasionally occur in cases being treated with one or other of the benzene-sulphonamide drugs, and Rimington and Hemmings (1938) have recorded abnormally high urinary excretion of coproporphyrins in patients being treated with sulphanilamide and also in rats given the drug.

Trinitrotoluene (T.N.T.) may damage the liver and cause toxic jaundice. A more serious, though less frequent, result of T.N.T. poisoning is aplastic anaemia, and sometimes aplastic anaemia follows the toxic jaundice. A common toxic effect is cyanosis, and gastric symptoms occur in T.N.T. workers—a toxic gastritis being recognized. In all cases a toxic effect, varying in

degree, may be produced on the blood, with an accompanying or resulting disturbance of pigment metabolism; hence porphyrinuria, varying in amount according to this disturbance, may result.

Rapid Clinical Test

When dealing with toxic T.N.T. cases a simple clinical test is highly desirable. We have found 20% sulphuric acid the most suitable reagent for liberating crude undifferentiated porphyrins and porphyrin-like pigment, and the amount thus thrown out can be used as a simple clinical test and rough quantitative guide to the degree of toxicity. Here is the technique in detail:

Place 50 c.cm. of urine in a flat-bottomed glass beaker of convenient size (400 c.cm.) and add 50 c.cm. of sulphuric acid (dilute) 20% by volume (20 parts conc. H_2SO_4 + 80 parts H_2O). Bring to the boil (beaker protected by wire gauze), and allow to boil for not more than one minute. Allow to cool and examine 12 hours or more later. If negative the solution will be quite clear, lemon-coloured, pale brown, or reddish brown. Occasionally when the solution is reddish brown the merest trace of a fine granular purplish-red deposit may be seen on the bottom of the glass. If positive the solution will be reddish brown, and a fine granular deposit of a purplish-red colour will be found in distinct quantity on the bottom of the beaker.

For purposes of day-to-day comparison the positive (toxic) urines may be conveniently classified and recorded as follows:

++ (Strongly positive):
Solution: deep reddish brown
Deposit: *abundant; dark purple*

\+ (Positive):
Solution: reddish brown (lighter than ++)
Deposit: *considerable; purplish red* (less than ++)

± (Weakly positive):
Solution: reddish brown (lighter than +)
Deposit: *moderate; purplish red*

Borderline results—between negative and positive—are occasionally met with in which the urine solution is reddish brown and the purplish-red granular deposit less than in ± cases but more distinct than in the undoubtedly negative. They may be conveniently recorded as $\frac{\pm}{=}$. Negative cases are classified as 0.

It is important to note that the deposit which settles down in positive (toxic) cases is *granular* and has a *purple* hue; for urines containing a distinct amount of albumin but no porphyrins yield a flocculent non-granular deposit of a dirty brown colour, and similar urines containing blood in quantity—e.g., during menstruation—give a heavy brown flocculent non-granular deposit and a brown supernatant fluid.

The above test can be carried out in a few minutes. It is inexpensive and simple to perform, and with organization large batches of urines may be easily dealt with. It enables us to say quickly whether or not in the urine of any T.N.T. worker porphyrin pigments are present in excess and so whether the person who passed that urine is or is not being affected by the T.N.T. By classifying in the manner we suggest the amount of pigment liberated, a rough guide to the progress of any toxic case from day to day may be obtained. For the ordinary purposes of the doctor dealing with T.N.T. cases there is no need to proceed further with the identification of the liberated pigment: this is a matter for the chemist, if desired. We have done so in all our cases of actual T.N.T. poisoning, and the technique adopted was based, in general, upon that of Rimington and Hemmings (1938) and further separation by chromatographic adsorption with a Twsett column.

Cases of T.N.T. Poisoning

Six cases of *toxic jaundice* due to T.N.T. were examined daily throughout the illness and at frequent intervals during convalescence over periods extending from 2 to 27 weeks. Varying in severity from slight to fatal, they included a fairly severe case that resulted in death from aplastic anaemia, which developed as the jaundice improved. Porphyrinuria was present in all, varying in amount from day to day with the degree of jaundice and gradually disappearing in cases which recovered.

One case of *T.N.T. aplastic anaemia*—but without jaundice—excreted porphyrins in considerable quantities: they gradually disappeared as the patient improved under treatment, to return later and persist all the time she has been under observation—45 weeks. During this period the blood count has been maintained almost at the normal level by treatment.

Four cases of *toxic cyanosis* from T.N.T.—varying from mild to severe—were examined in the same way over periods of 2½ to 10 months; porphyrinuria, varying in degree with the severity of the clinical symptoms, was present in all. Incidentally, it took much longer to clear up than in the jaundice cases.

A case of *T.N.T. sickness*, which might equally well be classified as "T.N.T. gastritis," improved and relapsed over a period of 3½ months' observation, and throughout this time porphyrinuria persisted, varying in degree with the severity of the clinical condition.

A case of *T.N.T. dermatitis*, recovering under treatment, was examined daily for 5 weeks. Porphyrinuria—definite but never abundant—was present during the first 6 days only. This accorded with the fact that, though the dermatitis was well marked, general symptoms were minimal.

Incidence of Porphyrinuria among T.N.T. Workers

In all, 431 workers actively engaged in contact with T.N.T. were examined by the above rapid test. 70 were long-service workers who had been regularly employed in T.N.T. work, in varying degrees of concentration, for 2 to 30 years. The remainder were new "war workers" employed since the outbreak of the war. 124 were in "light contact" with T.N.T., 132 in "heavy contact" with amatol, and 105 in "heavy contact" with pure T.N.T. The amatol workers (because of the mixture) were considered to work in less heavy concentration of T.N.T. than the heavy contacts with pure T.N.T. but greater than the light contacts. The results were:

	No. Examined	Porphyrinuria		
		0 or $\frac{\pm}{=}$	± or +	++
Long-service workers	70	72·9%	27·1%	0%
Light contacts	124	61·6%	36·3%	1·6%
Heavy contacts (amatol) ..	132	58·3%	33·4%	8·3%
Heavy contacts (pure T.N.T.) .	105	48·6%	40·9%	10·5%

Assuming the $\frac{\pm}{=}$ findings to be practically negative and the ++ markedly toxic, then, judging by the degree of porphyrinuria, about 73% of the long-service workers were non-toxic and 27% toxic, whereas the number of new short-service workers who proved negative (or non-toxic) decreased as the heaviness of contact increased, and, vice versa, the markedly toxic (++) increased with the heaviness of contact. Further, it was observed that the number of positive (toxic) cases *decreased* as the length of service (contact) increased. Of the 361 new war-workers 20.4% gave a ++ result, whereas none of the long-service workers did so, and 5 with the longest service of all (8 to 30 years) proved negative (0 or $\frac{\pm}{=}$): obviously the "fittest" for the work survive the hazards.

Workers in light contact are less likely to develop porphyrinuria than those in heavy contact. Two fairly comparable groups of 98 women, whose ages varied from 19 to 54 years, were examined; the average period of contact was 4.2 months in the light contact group and 6.4 months in the heavy. The results below show that many more light contacts are negative than in the heavy group, in which the strongly positive (++) are more than five times as numerous.

	No. of Women	Porphyrinuria				
		0	$\frac{\pm}{=}$	±	+	++
Light contacts ..	98	**47**	15	22	12	2
Heavy „ ..	98	**29**	20	27	11	11

Constituents of Urine and Porphyrinuria

T.N.T.—Of the 191 urines tested 68 gave a positive and 123 a negative result for T.N.T. (Webster test as modified by Ingham, 1941). Of 103 which showed definite porphyrinuria (i.e., were toxic) more than twice as many gave a negative T.N.T. reaction as a positive; 35 with borderline porphyrinuria gave much the same result; whereas of the remaining 53 showing no porphyrinuria (i.e., were non-toxic) about half gave a positive T.N.T. reaction and half were negative. Thus porphyrinuria is not related to the presence of T.N.T. in the urine. So far as toxicity is concerned the absence of T.N.T. may be of more significance than its presence. Possibly its presence proves nothing more than that it is being excreted after absorption, whereas its absence may mean either that it is being retained after absorption or that it has never been absorbed. The presence of porphyrinuria, however, signifies that toxic damage is taking place within the body.

Other Substances.—None of the 431 urines contained blood, sugar, bile pigments, or urobilin ; 4 contained urobilinogen and considerable porphyrins. A large amount of albumin was present in 1 and a faint trace in 107. Porphyrins were found in 10% more of the albumin-free specimens than of those containing albumin, suggesting that albuminuria is not a factor in the production of porphyrinuria.

Comments

Routine examination for crude porphyrinuria should provide a guide to the progress and cure of actual cases of T.N.T. poisoning, and its detection might assist in confirming the diagnosis in suspected cases. The incidence of porphyrinuria found in the series of 431 workers in contact with T.N.T. suggests that it is probably present during the development of symptoms—and possibly for some time—while the worker's health is subnormal and before disablement compels him to cease work. Routine testing of T.N.T. workers for porphyrinuria might reveal those being affected deleteriously by the T.N.T. in the pre-disablement stage—i.e., before symptoms compel them to report unfit. By this means workers specially susceptible or hypersensitive to T.N.T. would be known. The rapid simple method of liberating the crude porphyrin mixture detailed above would suffice for this purpose. By classifying the results as ++, +, ±, ±, or 0, as explained above, we obtain a rough measure of the degree of porphyrinuria. Removing positive workers from contact should improve health and efficiency ; but until a further survey, to include the clinical examination of positive workers, has been undertaken we would suggest that ++ and + workers might be removed and ± workers watched and tested again.

We consider this rapid test for crude porphyrinuria in T.N.T. workers yields information unobtainable from the Webster test and might usefully replace it.

In acute porphyria following sulphonal, trional, veronal, etc., abdominal pain, vomiting, constipation, and jaundice occur, and the severe toxic manifestations after use of the benzene-sulphonamide drugs include headaches, giddiness, drowsiness, sickness, vomiting, cyanosis, colic, anaemia, and jaundice ; even a dermatitis sometimes occurs. Long and Bliss (1938) discussed these toxic manifestations in 335 patients, and Rimington (1939) noted that the sulphonamide drugs which caused increased porphyrin excretion could also form methaemoglobin *in vivo*. Though congenital porphyrinurics are light-sensitive, photosensitivity is absent in idiopathic porphyry developing about the thirtieth year. The close resemblance of all the above symptoms to those met with in T.N.T. poisoning is noteworthy, as is the chalky or greyish pallor of countenance, accompanied by lilac-grey cyanosis of lips and margins and lobes of ears, which constitutes the T.N.T. facies.

While T.N.T. workers may suffer in health, only a small proportion become disabled and cease work. Many factors may contribute to this immunity—e.g., selection of workers, working conditions, medical supervision, acuteness of symptoms, and diet. Some may have a constitutional idiosyncrasy to T.N.T., just as some people are intolerant of certain drugs—e.g., the benzene-sulphonamide group, in which toxic symptoms are accompanied by porphyrinuria also. No conclusive explanation, however, has yet been given why some get poisoned and others do not. Moore and others (1917, 1921) showed that some animals varied in their tolerance for T.N.T. and that absorbed T.N.T. in man was finally excreted as an ester of glycuronic acid ; hence the suggestion that all workers in toxic nitro-compounds of benzene, phenol, or toluene should take a diet yielding a good supply of glycuronates—fresh vegetables and fruit as in antiscorbutic diet.

The fact that porphyrinuria is an accompaniment of the T.N.T. toxic state suggests the possibility of another food deficiency playing a part. As Spies *et al.* (1938) point out, nicotinic acid appears to have a fundamental role in porphyrin metabolism, the porphyrinuria of pellagra and of other diseases being decreased after its administration. The general toxic state, with porphyrinuria, from the sulphonamides is benefited by it. Its exact role in body nutrition is not clear, but a well-balanced diet should contain an adequate supply to maintain health. As milk, cheese, eggs, and meat contain nicotinic acid, and yeast, wheat germ, and liver are especially rich in it, their inclusion in T.N.T. workers' diet might be beneficial. Their diet before taking up T.N.T. work may not have been very well balanced and rich in this substance, or may have just sufficed for the requirements of ordinary life and work ; but with exposure to T.N.T. the demand for the protective factor may be too great for the limited supply in the customary diet, and so the greater susceptibility of new T.N.T. workers to become toxic might be explained. Workers with longer service are probably better off economically, and so may have taken more suitable food over a longer period.

While the administration of vitamin C (ascorbic acid) may be desirable on general grounds, there seems reason for thinking that the vitamin B complex, and particularly nicotinic acid, might be a better protective factor. The effect of administering nicotinic acid to toxic T.N.T. workers, with porphyrinuria, in the pre-disablement stage awaits opportunities for trial. Incidentally, the anorexia, etc., and abdominal symptoms from which toxic T.N.T. workers suffer in the pre-disablement stage, and which are met with in other toxic conditions with porphyrinuria, may explain an occasional complaint against factory canteen food.

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INCOMPATIBILITY IN HOMOLOGOUS TRANSFUSION

BY

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Severe reactions seldom occur after a first transfusion. A case recently observed by us may therefore justify the following report, especially as the examination of the patient's serum threw light on the particular features apparently responsible for the reactions.

Case Report

A woman aged 36 was admitted to the Rotunda Hospital on Aug. 19, 1941, and was discharged on Sept. 8. She had been married 15 years and had had 4 children, the last pregnancy being in 1937. She came complaining of uterine haemorrhage for the past 5 weeks. Previous to that she had had no menstrual troubles. Examination of her chest revealed no abnormalities. Her blood pressure was 125/80. Bimanual examination showed that the uterus was large and retroverted and there was bleeding. She was anaemic, her haemoglobin being 40% and the red cells 2,120,000 per c.mm. Her blood group was O. A diagnostic curettage produced thick polypoid specimens, and histological examination showed glandular hyperplasia, a few of the glands being cystic. An enlarged left ovary was felt, and her condition was diagnosed as "metropathia haemorrhagica" and hysterectomy advised.

As she was so anaemic a transfusion of a pint of blood from a Group O donor was administered at drip rate on Aug. 22. She had never had a previous blood transfusion. On the 23rd a severe haemolytic reaction developed, her temperature rose to 102.4° F., and her pulse rate increased from 90 to 120. She was slightly jaundiced, and on that day passed only 1 oz. of urine. Intravenous injections of glucose-saline at drip rate

were given, and next day 8 oz. of urine was passed; after that she soon became normal again. Her jaundice was very definite, and her serum was icteric in appearance, with an indirect positive van den Bergh reaction. Her urine was rather dark, but was not examined spectroscopically for methaemoglobin. For about 48 hours her condition gave rise to anxiety.

Serological Investigation

According to the information available, cross-matching before transfusion had shown no incompatibility. The result was, however, different when we had the opportunity of repeating the examination eight days after transfusion. It was beyond doubt that both the patient's and the donor's blood belonged to Group O. The only uncommon phenomenon on this re-examination was the agglutination of the donor's corpuscles by the patient's serum. The agglutinating action of the patient's serum on the donor's corpuscles was titrated by mixing equal amounts of serum dilutions and of an approximately 1% suspension of the donor's corpuscles; the result was noteworthy in two respects: (1) the titre of the irregular iso-agglutinin was rather high—1:64 at room temperature; and (2) the titre was increased to 1:128 when the tubes were kept in the incubator at 37° C.

Examination of other blood samples belonging to Group O showed that many corpuscles were agglutinated by the patient's serum, though in different degree. The serum yielded marked agglutination with corpuscles of 87 (75%) out of 116 Group O persons. On the other hand, 44 other sera did not agglutinate the donor's corpuscles or such O corpuscles as were agglutinated by the patient's serum. The conclusion must be drawn, therefore, that the uncommon behaviour is due to a peculiar property of the patient's serum. In these circumstances the possibility had to be considered whether the patient and the donor belonged to different types within the M-N system, although anti-M and anti-N antibodies are hardly ever present in human serum and are usually not produced by iso-immunization in man. Actually the patient's and the donor's bloods belonged to different types, the patient's corpuscles containing the factor M, the donor's corpuscles the factor N. The use of anti-M and anti-N sera as well as tests with the patient's serum showed, however, that there was no agreement either between the action of the patient's and anti-M serum or between that of the patient's serum and anti-N serum. The possibility that the accident following transfusion and the presence of irregular iso-agglutinins in the patient's serum was caused by the interference of anti-N agglutinins may therefore be excluded.

Discussion

The iso-agglutinin observed is different from many irregular iso-agglutinins in the fact that it acts in the warmth at least as strongly as in the cold. While other agglutinogens, apart from those characterizing the A-B and the M-N system, share the widespread distribution in human blood with the agglutinogen observed by us, they have hardly ever caused a severe reaction after transfusion. In the older literature, however, observations are recorded which indicate that irregular agglutinogens may play an important part in this respect. References to these are given by Wiener (1939). A case reported by Zacho (1936) may be mentioned because of the impressive similarity to our observations. It concerned a pregnant woman who received some transfusions of homologous blood (Group A) and died after a severe haemolytic reaction following on transfusion. Cross-matching tests, made after the accident, showed that the patient's serum agglutinated the corpuscles of two of the three donors. This irregular agglutinin acted most strongly at 37° C., its activity declining with a decrease in temperature. 60% of the blood samples examined (Groups O and A) were agglutinated by the patient's serum. Zacho speaks, therefore, of an irregular agglutinin acting on a hitherto unknown agglutinogen.

In this connexion, however, the question must be considered whether the iso-agglutinogen playing an important part in our case and in others might not be the same as that discovered by Landsteiner and Wiener (1940) and designated the "Rh factor." This Rh factor is specific for monkey (rhesus) blood and is present in about 85% of human blood samples. On immunizing rabbits or, better still, guinea-pigs with rhesus corpuscles, as was recommended later by Landsteiner and Wiener (1941), antisera are obtained which after absorption with selected human bloods or even after simple dilution act only on human blood corpuscles which contain the Rh factor. The difference between the percentage of Rh-positive samples and the agglutination of blood samples by the patient's serum in our case or in that reported by Zacho need not be of much significance, for it is understandable that the immune serum used by Landsteiner and Wiener has a greater activity than human sera. Moreover, the patient's serum was withdrawn in our case at different times up to six weeks after transfusion, and the agglutinating power decreased by degrees rather quickly. The calculated percentage in our examinations (75%) refers, however, to the total of all tests, so that it may be considered as an average.

According to the papers recently published by Wiener and Peters (1940), Wiener and Schaefer (1940), Levine and Katzin (1940), Levine, Katzin, and Burnham (1940, 1941), and Wiener (1941), the Rh factor is hereditary. When, therefore, the foetus has inherited the Rh factor from the father, and the mother has not this factor, iso-immunization of the mother may occur from the foetus *in utero*, so that anti-Rh antibodies are produced in the mother. They may, on the one hand, penetrate the placental barrier and in such a way induce erythroblastosis foetalis, as Levine, Katzin, and Burnham (1941) have assumed. On the other hand, their presence in the mother may be the reason that at the first transfusion accidents occurred which have been described especially in intra-partum or post-partum cases. In the same way it is understandable that reactions following repeated transfusion of homologous blood may happen when the patient is Rh-negative and the donor Rh-positive.

As in our case the severe reaction followed the first transfusion, it must be assumed that, if the irregular iso-agglutinins correspond to the Rh antibodies, the patient was immunized during pregnancy. Because of the heredity of the Rh factor the conclusion was reached that the patient's husband must be Rh-positive. Unfortunately the husband's blood was available only about six weeks after transfusion, at a time when the irregular iso-agglutinins of the patient's serum were already very much weaker. Nevertheless it was possible, by freezing the serum and using the layers at the bottom of the frozen serum—a method successfully utilized by O'Meara (1933) for concentrating iso-agglutinins—to obtain a concentrated fluid from the patient's serum which agglutinated the husband's blood corpuscles, also belonging to Group O, distinctly. In this way it could be shown that the iso-agglutinogens, the antibodies of which were in the patient's serum, were present in the husband's corpuscles. Thus it seems justifiable to assume that the irregular iso-agglutinins in the patient's serum may have been the consequence of an iso-immunization of the patient during pregnancy. The children's corpuscles, however, were not available for testing against the mother's serum.

Conclusion

It must be emphasized that the identity of the irregular iso-agglutinin observed in our case with the anti-Rh agglutinin has not been proved, because a known anti-Rh serum was not available for our examinations. Nevertheless, the activity of the agglutinin in the warmth, the frequency of the corresponding agglutinogen among the population, and the fact that the irregular iso-agglutinin was detectable only after transfusion for a relatively short period and not on cross-matching beforehand, may favour assumption of interference by anti-Rh antibodies and Rh antigens. The peculiarities correspond to those referred to by the American authors, particularly by Wiener. On the other hand, the fact must be stressed that reactions caused by the interaction of Rh-positive blood and its antibodies are described only on repeated transfusion or in women who had recently given birth or had had a miscarriage or a stillbirth. Our patient had had children. It must be borne in mind, however, that the last birth occurred four years before transfusion. This interval is too long for this case to be identical with the reported cases in which the Rh antigen was responsible for severe reactions after the very first transfusion in intra-partum or post-partum patients. Nevertheless, it is questionable whether this is an essential difference. If it be assumed that the readiness to produce antibodies may

remain after pregnancy of an Rh-negative mother bearing an Rh-positive child, this state of allergic reactivity may exist for very different periods of time, dependent on individual peculiarities and perhaps also on non-specific stimulations which the organism received in the meantime. From these considerations we do not believe that we are entitled to exclude the possibility that in our case the irregular iso-agglutinin which was responsible for the reaction following a first transfusion was an anti-Rh agglutinin.

Summary

A severe haemolytic reaction was observed following a first transfusion of homologous blood (Group O). Although no incompatibility was noted on cross-matching before transfusion, the patient's serum strongly agglutinated the donor's corpuscles on re-examination eight days after transfusion.

While the irregular iso-agglutinogen present in the donor's corpuscles was found in 75% of O corpuscles examined and also in the blood of the patient's husband, the irregular iso-agglutinin was apparently a peculiar feature of the patient's serum.

The irregular iso-agglutinin was not identical either with anti-M or anti-N antibodies. It acted more strongly in the incubator than at lower temperatures. It had at first a relatively high titre, but weakened quickly within six weeks.

The question is discussed whether the irregular iso-agglutinin observed is the same as the anti-Rh antibody.

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MULTIPLE SMALL- AND LARGE-GUT INJURIES: RECOVERY

BY

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Reliable statistics regarding mortality are available for patients suffering from small-gut injuries who have been submitted to laparotomy. In Sir Cuthbert Wallace's *War Surgery of the Abdomen* a series of 255 cases of injury to the small intestine and its mesentery are recorded, the death rate being 65.9%. Where small-gut injuries were complicated by concomitant wounds of the colon the death rate rose to 74%. It is stated on page 225 of *Surgery of Modern Warfare*, edited by Hamilton Bailey, that "recent experiences in 1940 in no way refute the grave view of wounds of the large bowel that was entertained twenty years ago." In view of the high mortality (74%) of injuries to the small gut combined with colonic wounds, the record of the following case may hold some interest.

Case History

The patient was a schoolboy aged 10. At 5.45 p.m. on April 23, 1941, he was accidentally shot at two yards' range from a 0.22-bore Winchester rifle which was resting horizontally on his father's knee, the right side of the boy's body being towards the rifle. The boy received a wound in the right buttock. He was admitted to hospital at 6.30 p.m., profoundly shocked and apparently moribund. His temperature was 97° F. and his pulse uncountable and very thready; his B.P. was 80/60. The child lay on his left side with his knees and thighs flexed on the abdomen. No further examination was undertaken at this juncture.

Immediate resuscitatory measures were instituted. Morphine sulphate 1/6 grain was given hypodermically and a continuous plasma infusion begun. Two hours later his condition was much improved; the temperature was 97° F., pulse 150, and B.P. 100/80. Examination, with minimal disturbance, revealed an entrance wound in the right buttock, 1½ in. above and 1 in. posterior to the right greater trochanter. There was no exit wound. Abdominal examination left no doubt as to the presence of peritoneal irritation. He had an immobile guarded lower abdominal wall, with generalized tenderness and "release" pain. He passed 4 fl. oz. of urine. This was clear and contained no abnormality, and microscopy revealed no red blood cells. There was no evidence of injury to either the vessels or nerve trunks of the lower limbs. Examination of the whole abdomen, pelvis, and upper half of both thighs, including lateral views of the limbs, by portable *x*-ray apparatus, showed the presence of the bullet posterior to the left femur on a level with the lesser trochanter. No fracture of the bony pelvis was demonstrable.

At 9.45 p.m. his temperature was 98.6° F., pulse 140, and B.P. 100/70. A transfusion of 450 c.cm. of plasma had now been administered, being followed by whole-blood transfusion preparatory to and during laparotomy.

Operation

At 10 p.m. open ether anaesthesia was induced, with atropine sulphate 1/100 grain as premedication. As the entrance wound was readily accessible without turning the patient it was decided to proceed with the laparotomy. The abdomen was opened through a right subumbilical paramedian incision. The peritoneal cavity contained free blood, and several clots which were removed. Systematic examination of the small gut from above downwards revealed the following:

(1) Three perforations of the ileum within the terminal 3 ft. The two proximal of these were on the antimesenteric border, but the lowermost was at the junction of the bowel and the mesentery. Fortunately the latter was not damaged here or at any other point. These perforations were closed with purse-string sutures, using atraumatic intestinal catgut, the pouting mucosa being invaginated. Escape of intestinal contents here was minimal. (2) Perforation of the appendix. This structure was almost completely divided at its centre, a remnant of the mucosa adjacent to its mesenteric attachment serving to maintain continuity. Appendicectomy with invagination of the stump was performed. Proceeding with inspection of the colon, there were found: (3) two perforations of the antimesenteric border of the pelvic colon with semi-solid faeces oozing from both. There was, in addition, a longitudinal tear about 3 in. in length, involving only the serous coat of the lower pelvic colon. Again, fortunately, there was no injury to the pelvic mesocolon. These perforations were given treatment similar to that of the small-gut wounds, with an appendix epiploica oversewn as a further precautionary measure. The linear tear in the serous coat was repaired with a continuous suture.

The pelvis was cleared of clots and faeces, and a rapid examination was made, which showed no haemorrhage and no injury to the bladder. Powdered sulphanilamide, 3 gm., was dusted into the pelvis, which was drained. The abdominal incision was closed in three layers, with drainage to the rectus sheath.

The edges of the entrance wound made by the bullet were excised and a fragment of trouser material was removed. Devitalized muscle was then excised and the track was syringed with 1/1,000 euflavine solution and insufflated so far as practicable with sulphanilamide powder; the skin was closed with silkworm-gut sutures.

Antitetanus serum, 3,000 units, and anti-gas-gangrene serum, 8,000 units, were given intramuscularly. The blood transfusion was followed by two pints of 5% glucose–saline given by the drip method during the next twelve hours.

Progress

The next day the patient's temperature was 101° F. and his pulse 128. At 10.30 a.m. his bowel opened spontaneously; a soft partially formed stool showing no macroscopic blood was passed. As there was no vomiting, fluids were freely given by mouth. For the next three days 1 gm. of sulphapyridine was given three times daily. The pelvic drain was removed on April 25 and the one to the rectus sheath on the following day. There was only a slight superficial purulent discharge from the lower end of the abdominal incision; this lasted a few days. The entrance wound healed by first intention.

On April 27 a glycerin suppository resulted in the passage of a soft stool. Flatus was freely passed during the whole of the immediate post-operative period. On April 30 the patient's temperature was normal, and remained so for the next two

weeks, by the end of which time his condition was very satisfactory.

On May 13 his temperature rose to 99.4° F. He complained of pain in the left buttock and was unwilling to extend the left hip. There was tenderness on pressure posteriorly over the upper end of the left femoral shaft, but no signs of inflammation could be seen at this site. With light extension applied on a Thomas knee-splint by means of adhesive strapping to the left thigh all signs and symptoms disappeared in 3 days.

At the end of a month radiological examination revealed the site of the bullet unchanged. It was still posterior to the lesser trochanter of the left femur. In view of the patient's excellent condition it was decided to remove it, and on May 30, after accurate radiological location on the morning of the operation, it was easily removed from the left thigh through a small posterior incision just below the gluteal fold. The operation was performed under spinal anaesthesia, employing 0.5 c.cm. of hypobaric solution of duracaine with puncture between the fourth and fifth lumbar vertebrae. The ventral decubitus was maintained after the injection of the anaesthetic fluid.

The boy made an uninterrupted recovery from this procedure, and was discharged well two weeks after the extraction of the bullet.

Summary

A case of recovery from multiple combined small- and large-gut injuries involving the appendix is recorded.

The absence of post-operative complications, apart from those directly attributable to the retained bullet, is noteworthy.

The extensive visceral damage that can result from a wound in the buttock is amply demonstrated.

The successful removal of the bullet is described.

My thanks are due to Mr. A. M. Webber and Mr. Llewellyn Davies of the staff of the General Hospital, Nottingham, for permission to publish this case.

PNEUMOCOCCI IN THE BLOOD STREAM TREATED WITH COLONIC LAVAGE AND SULPHAPYRIDINE

WITH A NOTE ON CHANGES IN DIFFERENTIAL WHITE CELL COUNT

BY

H. W. HALES, M.D.

The following case of pneumococcal septicaemia may be considered of interest because of the unusual white cell changes associated with it.

Case Report

The patient, a woman aged 56, had had thyrotoxicosis with great thyroid enlargement for many years. In March, 1940, a course of citrus fruit diet and colonic lavage resulted in a diminution in cardiac dullness and pulse frequency and a great reduction in the size of the thyroid. Improvement was maintained until November 24, 1941, when she had an attack of diarrhoea and vomiting, with acute pain in the left hypochondrium at night. The next morning tenderness was present over the caecum. The rectal temperature was 103°, the pulse 120, and the respirations 30. A blood count showed the counting chamber swarming with pneumococci; these were also present in the next day's count. On November 29 a blood culture grew pneumococci. Abdominal discomfort with a few short acute exacerbations, and a general clinical state causing grave anxiety, continued until December 1, when a small tumour was noted in the left kidney region. On December 3 it was much bigger, was palpable below the costal margin, and was clearly splenic. This was confirmed by radiographs. Infarction was queried.

During the night of December 5 respirations suddenly rose to 38, with much dyspnoea, cyanosis, and violent coughing bouts. Pulmonary infarction was suspected, but no physical signs were observed. The attack passed off in a few hours, but a further attack of abdominal pain occurred two days later. On December 10 there was paroxysmal tachycardia with a sensation of chest constriction. The electrocardiogram had improved compared with that of 1940. Subsequent progress was uneventful.

Treatment.—For the first seven days the diet was restricted to grapes, oranges, and pears; then one pint of milk diluted with a pint of soda-water was given in twenty-four hours to obviate possible protein loss (this was discontinued after forty-eight hours because the patient disliked it); and 1 oz. of honey daily. Sodium bicarbonate was given to alkalize the urine, and this was achieved on December 2 with 2 drachms four-hourly. Colonic lavage with potassium permanganate or retention enemata was carried out, varying in frequency from four-hourly to once in twenty-four hours. Sulphapyridine was administered as shown in Chart II.

Pathology.—The initial leucocytosis and high polymorph percentage showed good reaction and possible pus formation, later negatived by a fall in polymorphs and diminishing leucocytosis. The lymphocyte rise and the large mononuclear percentage about the fourteenth day were difficult to explain, but, taken in conjunction with splenic enlargement and some enlargement of the cervical and inguinal glands, suggested infective mononucleosis (Tidy, 1934).

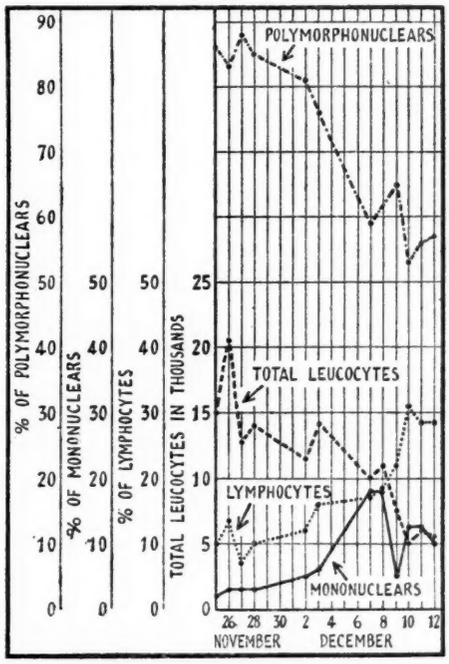

CHART I.—Showing the initial leucocytosis and high polymorph percentage, with later fall in polymorphs and diminishing leucocytosis.

Commentary

It is unusual to see organisms in the counting-chamber blood, and the positive blood culture four days later indicated true septicaemia rather than transient bacteriaemia such as is described after tooth extraction (Okell and Elliott, 1935). No portal of entry for the organism could be found, but the patient had been in contact with "gastric influenza."

It is interesting to speculate as to the cause of the mononucleosis reversing the earlier polymorphonuclear leucocytosis. Is it possible that pneumococcal bacteriaemia is an early factor in the aetiology of glandular fever? Or is the mononucleosis itself a sign that the body defence has won against an invasion by organisms, illustrating a terminal phase of septicaemia? The localization of toxins in the glands tends to support this theory. Sulphapyridine was useless except in very large doses, but no sign of toxaemia was noted with 14 gm. in twenty-four hours. Alkalization may have negatived the toxic action. The resistance of the urine to alkalization is characteristic of these toxaemias and suggests a diminution of the plasma bicarbonate reserve. The only dose of alkali of thera-

peutic value is that which produces alkalization. This was repeatedly proved in the dangerous types of influenza and pneumonia following the last war, when the necessary dose was sometimes as much as 1/2 oz. four-hourly.

The busy practitioner has neither the time nor the facilities for doing frequent blood counts, and it is probable, therefore, that many points in the aetiology of acute disease are missed. Facilities for simple pathology should be made much more easily available, not only by the establishment of national laboratories as is already being done but by the provision of technicians who could tour given areas and collect specimens.

The importance of rectal temperature readings as contrasted with the fallacious impressions produced by oral findings is seen in Chart II. Without such readings and

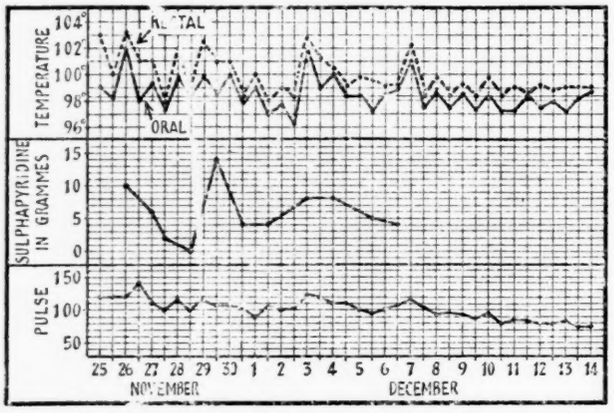

CHART II.—Temperature and pulse records of case, together with dosage of sulphapyridine given.

repeated blood counts the clinical picture assumes a different aspect and the true diagnosis might never be made, a false impression being formed as to the severity of the illness.

Summary and Conclusions

The presence of pneumococci in the blood in a counting chamber is described.

Colonic lavage with potassium permanganate, with diet restricted to raw fruits, enhances the value of sulphonamides in pneumococcal septicaemia (Hales, 1938).

Alkalization of urine is a necessary adjunct.

Rectal temperature readings in acute pyrexial disease are essential. Oral readings are often fallacious.

A possible aetiological factor in the early stages of glandular fever is suggested.

The need for wider national provision of clinical research facilities is indicated.

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On April 1, with the consent of the Ministry of Health, the Central Council for Health Education took over from the British Social Hygiene Council the work of popular enlightenment on venereal diseases hitherto done by that body for local authorities. The personnel, equipment, and material employed by the Social Hygiene Council in this work is being transferred to the Central Council, who will therefore be in a position to continue the service to local authorities without interruption. This transfer is a step towards accomplishing the Ministry's aim of making the Central Council the sole body responsible for popular health education in England and Wales. The Social Hygiene Council will continue as a voluntary organization, with no subsidy from public moneys. In addition to maintaining its colonial and international work on the control of venereal diseases and its concern with the social implications of these diseases in Great Britain, it will concentrate on problems of social biology, including preparation for marriage, the adjustment of personal problems, and the application of present knowledge of the biological sciences to existing social problems, particularly those related to the war effort.

Medical Memoranda

Herpes Zoster: Multiple Lesions

Herpes zoster will always remain an interesting disease to the clinician. Probably no nerve is exempt from attack, but usually only one is involved. Cases of multiple herpes and herpes generalisatus have, however, been reported from time to time. Skeer (1936) reported 2 cases of generalized herpes in patients suffering from lymphatic leukaemia after treatment with Roentgen rays. Barker (1939) reported 9 cases. Campbell (1936) described a case of herpes zoster affecting both trigeminal nerves. Extensive herpes has also been reported in patients suffering from rheumatoid purpura (Audibert and Paganelli, 1936). In fact, most of the cases in which multiple zoster lesions are described were those of some severe disease, such as leukaemia, Hodgkin's disease, or tuberculosis. The virus of herpes may in such cases find an easy ground to work on or may even multiply in the body, causing the disseminated lesions described. The following case is recorded in view of its rarity.

CASE REPORT

A young man aged 19 was referred to me on Oct. 20, 1941. For five days he had had a severe burning and itching sensation on the left side of his chest and darts of pain down his left leg. On Oct. 18 he had noticed a rash on the chest and left leg. At the time of examination most of the pain and discomfort had gone except while in bed, when severe itching returned. I examined his body thoroughly and found: (1) A well-marked grouped vesicular rash sweeping round the left side of the chest in the segmental distribution of the sixth dorsal segment—see diagram (A). (2) A narrow strip of grouped vesicles from below the tip of the acromion down the outer front aspect of the left arm (B). This corresponds with the skin distribution of the fifth and sixth dorsal segments. (3) A similar rash on the left thigh (C). This began at the back of the outer third of the gluteal region about 2 in. below the crest of the ilium, and swept around the external aspect of the thigh, appearing in front about the middle third and ending just above the patella. This area of eruption corresponds anatomically with the third lumbar segment skin distribution. (4) Another group of vesicles on the outer half of the left popliteal fossa (D). Here the rash travelled down the outer aspect of the leg, gradually making for the front, and had reached the anterior of the skin in the lower third, ending up on the dorsum of the foot near the base of the toes. The spinal segment responsible was the fifth lumbar.

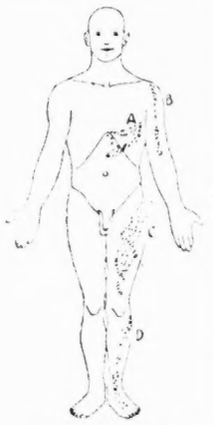

Diagram showing distribution of lesions. A=6 D; B=5 D and 6 D; C=3 L; D=5 L.

The patient's general condition was good. He had no pyrexia, and there were no obvious changes in his nervous system. Lumbar puncture was not performed.

COMMENT

This case is of interest in view of the scattered nature of the lesions, all situated on the left side of the body. They completely missed the fourth lumbar segment and involved the ganglion immediately above and below. I have never seen any reason put forward why zoster is so common on the left side and distinctly rare on the right. It may have something to do with the vascular supply, which may be less active on the left side because of the greater muscular development of the right half of the body, more especially the limbs.

At no time did the patient feel ill or "off colour," and hospital treatment was not necessary. Before the typical lesions of herpes appear in a case like this a diagnosis of sciatica might easily be entertained. The doubt would be cleared up only by the evolution of the disease.

Curragh, Kildare. JOHN J. WALLS, M.D., M.R.C.P.I., D.P.H.

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Reviews

MEDICAL ASPECTS OF FLYING

Principles and Practice of Aviation Medicine. By Harry G. Armstrong, B.S., M.D., Capt., Medical Corps, U.S. Army. (Pp. 496; illustrated. 36s.) London: Baillière, Tindall and Cox.

Fit to Fly. A Medical Handbook for Fliers. By Malcolm C. Grow, M.D., Lieut.-Col., and Harry G. Armstrong, B.S., M.D., Capt., Medical Corps, U.S. Army. (Pp. 387. 15s.) New York and London: D. Appleton-Century Company.

Medical Guide for Flying Personnel. By Heinz von Diringshofen. Translated by Velyien E. Henderson, M.B., Professor of Pharmacology, University of Toronto. (Pp. 102. 4s. 6d.) Toronto: University of Toronto Press; London: Oxford University Press.

The medical aspects of flying received much attention towards the end of the last war, and shortly afterwards the observations which resulted were freely published in several languages. Different methods of physical and psychological selection of air crews were reported, and the effects of altitude with anoxia and low atmospheric pressure, as well as of gravity and acceleration, were explored. It was found that suitable temperament and aptitude were important for flying, and that the physical and psychological aspects of the problems encountered were often inseparable. Not only this, but the problems were related to physical, physiological, and psychological conditions which had not previously been encountered in medicine. Realization of this led to the conception of a new entity, aviation medicine. This subject presented the medical worker with new syndromes and led into difficult fields of respiratory physiology, into the physics of expanding gases, and into the mechanics of speed and acceleration. It also required a knowledge of the pilot's response to the unusual psychological stress to which he was so frequently subjected. In this country the Medical Research Council report on the *Medical Problems of Flying* (1920) became the standard work of reference, and elsewhere, notably in Germany and America, similar standard works appeared. There was a lull of over ten years when little work was done, and only one important work, Bauer's *Aviation Medicine*, was published. With the rapid growth of commercial aviation on the American continent and to a less extent in Europe in the early 'thirties, interest was again aroused and contributions upon the subject began to reappear. The U.S.A. led, Germany was second, and this country was far behind.

Three important new books emphasize the enormous advances which the stimulus of commerce and passenger traffic and more recently the requirements of war have produced. The *Principles and Practice of Aviation Medicine*, by Capt. H. G. Armstrong, director of the Aero Medical Research Laboratory of the U.S. Army Air Corps, has already become the standard reference book for all advanced workers in this subject; a smaller book, *Fit to Fly*, is a very creditable attempt by Lieut.-Col. M. C. Grow and Capt. H. G. Armstrong to present the essentials of aviation medicine to the flying man; while the third, a handbook called *Medical Guide for Flying Personnel*, written by Heinz von Diringshofen, Oberstabsartz der Luftwaffe, has been translated by Major V. E. Henderson, R.C.A.M.C., and published in Toronto.

Aviation Medicine is a comprehensive manual which deserves much praise. The statement that it is now the standard work of reference for advanced workers is well founded. Its five hundred pages are divided into twenty-seven chapters, dealing first with the history of the subject, the place and duties of the flight surgeon, the evolution and principles of air-crew selection, and then separate chapters on each aspect of selection, this part of the book ending with a chapter on the care of the flyer. The middle section is the best, for in dealing with the subjects of anoxia, altitude, low pressure, air embolism, and acceleration, Armstrong is speaking as a master. Each chapter is full of personal experimental results well illustrated by graphs and charts. Unfortunately, Armstrong has so many data of his own to offer that some sections are not well balanced. The bibliographies at the end of each chapter are not comprehensive enough, and do not include many references to the work done in other countries. Many of the observations, particularly those relating to gaseous physiology, were presented for the first time in this book and have since been confirmed by others. The closing chapters deal with the psychology of flying, and with the preventive aspects of aviation medicine. There is a tendency to present the physical and psychological results of flying in the guise of new disease entities, so that the effects of altitude, so various and complicated, are divided into acute and chronic altitude sickness, while the psychological disorders resulting from flying—some caused by fear, some by fatigue, and many constitutionally predetermined—are described as aeroneurosis, a disease *sui generis* in contrast to other neuroses. Although the clinical deductions may at times be inaccurate, the book is mainly concerned with hard scientific facts. These are clearly presented and well substantiated, and such a wealth of detail is included that it is a valuable work of reference. Nevertheless it covers so wide a field that it can be read with profit by anyone concerned for the medical welfare of flying personnel, as well as by more specialized investigators.

Fit to Fly is the lay counterpart of *Aviation Medicine*. Its chapters are arranged somewhat similarly, but there is a much greater emphasis on the general aspects of health on the ground, in the air, at home, and abroad, and, naturally enough, there are less physiological and physical data. The first eight chapters are very elementary and comprise a layman's guide to general medicine, having no direct application to flying. The chapters on physical and mental hygiene are excellent, but those dealing with systemic diseases paint a very gloomy picture, with, for example, some lurid accounts of skin diseases which may well make the introspective layman unduly anxious. They show a lack of balance, containing notes on rare conditions—"pterygium," for instance—and advise upon the effects of over-indulgence in tea. The middle part of the book, dealing with medical examination and selection, is very full, perhaps too full, and should be primarily used for reference. The last part is excellent, the chapters on the atmosphere and respiration, altitude sickness, oxygen, low pressure, "blacking out," and so on being a clear exposition for the flying man of the physiological difficulties he may encounter. He should find the information and advice offered very valuable. The book, though simple, is accurate and up to date, and can be recommended to those pilots who are interested in the physical and psychological aspects of flying.

The *Medical Guide for Flying Personnel* was written for members of the Luftwaffe at the beginning of the war. It is consequently more austere and practical than *Fit to Fly*, and it is strictly confined to the physical problems of flying. Explanations of general medical principles and details of examination and selection are excluded, and its one hundred pages are packed with pertinent data and explanations. The chapters on altitude, acceleration, and the special senses contain instructive graphs, diagrams, and pictures, and include much technical information. It has been admirably translated, the translation being specially designed for members of the Air Force. It is concise, small, and cheap, and is in all ways admirably suited to its purpose. It can be confidently recommended to medical officers, who would no doubt introduce it to the flying personnel under their care.

PHYSICS FOR THE RADIOLOGIST

Radiology Physics. An Introductory Course for Medical or Pre-medical Students and for all Radiologists. By John Kellock Robertson, F.R.C.S., Professor of Physics, Queen's University, Kingston, Canada. (Pp. 270. 18s.) London: Chapman and Hall.

In this volume the author, by carefully selecting his material, has succeeded in marking out a clear path through the many branches of modern physics with which radiology is concerned, and has produced a book which is not too bulky, containing just the kind of information required by the radiologist. Close attention is paid to physical principles, which are well explained by the aid of numerous simple and well-drawn diagrams.

There is no need to emphasize one part of the book more than the other, as it is uniformly of good quality. Reference may be made, however, to the chapter on dosage measurement to show how thoroughly the work has been done. After describing the different methods employed to measure the intensity of Roentgen rays, reference is made to the unit of dosage. It is evident that the author has studied the conclusions reached at different International Radiological Congresses which have dealt at various times with this matter. He discusses the Roentgen unit as first conceived and as later modified to cover wider ranges of radiation, and thus avoids the

possibility of confusion. The reader is left in no doubt as to the present position concerning dosage measurement. In another part of the volume a concise account is given of radio-activity, including artificial radio-activity. The equivalence of mass and energy is clearly explained and illustrated by examples, and enough information is supplied to make the subject quite intelligible to the elementary student.

The volume, taken as a whole, is a triumph of clear exposition; it contains little mathematical treatment and is sufficiently simple to be understood by the student who has completed only the normal intermediate course in physics. It will be welcomed by radiologists, and is well conceived to meet the needs of those who are following postgraduate courses with a view to a diploma in medical radiology.

The printing is good and the text is remarkably free from misprints. Both author and publishers deserve thanks for the production of a most useful volume for medical men interested in radiology and, in fact, for all those who desire an elementary up-to-date summary of the subject.

TROPICAL MEDICINE

Tropical Medicine. By Sir Leonard Rogers, K.C.S.I., C.I.E., LL.D., M.D., F.R.C.P., F.R.C.S., F.R.S., and Sir John W. D. Megaw, K.C.I.E., M.B., D.Sc. Fourth edition. (Pp. 536. 21s.) London: J. and A. Churchill.

This new edition looks very like its predecessor, but we are told in the preface that the attempts to prevent it getting larger have actually resulted in a diminution in the number of pages. A good deal of revision has occurred, and this is particularly evident in the sections on dietetics. Under "Malaria," in the part devoted to treatment, the use of atebrin and plasmoquine is carefully considered and the conclusion is reached that these drugs cannot replace quinine on account of their greater toxicity. Nevertheless they are valuable in cases in which quinine is contraindicated. The use of the sulphonamides in undulant fever and plague is discussed, and also the recently introduced diamidines in leishmaniasis. Sulphaguanidine, which is being increasingly used for the treatment of bacillary dysentery, is not mentioned, but probably the proofs of the edition were passed before knowledge of its value became general. Under "Schistosomiasis" and "Filariasis" some mention of the diagnostic value of skin reactions which result from injections of antigens might have been made. This, however, is a small point, for it is almost impossible to discover any errors among the mass of valuable and highly practical information which the book provides for its readers. Like the previous edition, this one is a clear and up-to-date account of tropical medicine as required by medical practitioners in hot countries.

Notes on Books

War in the Mind: The Case Book of a Medical Psychologist is described on the title-page as an introduction to the practical application of modern psychology (London: The Macaulay Press, 8s. 6d.). The author, Dr. CHARLES BERG, is a psycho-analyst, and against his own and his master's better judgment, as expressed in a facsimile letter from Prof. Freud, he tries to present the theory and practice of psycho-analysis in a popular form. For this purpose he has chosen to present brief notes of 25 cases from his case books, with a final chapter on theory. His material is simply and attractively presented, and Dr. Berg is not one of the bigoted members of the cult who insist on all or none. He admits that other methods are often preferable and more suitable in certain circumstances and for certain patients, but that the psychotherapist, whatever method he uses, will benefit enormously from a thorough knowledge of the practice and theory of psycho-analysis. With this the reviewer is in such close agreement that he finds it difficult to assess how far the lay public may be affected by this presentation. As Freud says, psycho-analysis cannot be learned by short cuts, and if this is attempted the pupil will either revolt and become irrationally prejudiced against the whole subject, or will accept everything with facile flattery; but for those with some knowledge of and interest in psychiatry and psychotherapy this book is bound to be attractive and well worth reading.

A second edition of *Diseases of the Eye: A Textbook for Students and Practitioners*, by Mr. EUGENE WOLFF, has now been published by Cassell and Co. at 21s. New features are some additional illustrations and a short chapter on bandaging. Otherwise it is largely a reprint of the first edition, though the author has taken the opportunity of indicating some of the newer therapeutic agents. A drastic revision of the text to eliminate curiosities and non-essentials would have been helpful.

The already thin disguise of "Dr. Anthony Weymouth" is worn yet thinner by the appearance of his photograph as a frontispiece to his diary, *Plague Year* (Harrap, 10s. 6d.). Unlike its prototype, this is a genuine record of a portentous year, with the forecasts left unaltered whether they subsequently proved correct or mistaken. The result is humiliating, if salutary, to the general reader. Most of us must have shared the author's feelings during the disastrous events which occurred between March, 1940, and February, 1941; the same tendency to exaggerate successes and belittle reverses; the same wishful thinking that Hitler had "shot his bolt," that Germany was on the point of revolt, that if Mussolini dragged his country into the war he would speedily fall. Slowly, yet how slowly, we were brought to a stark realization of the facts, if indeed we have sufficiently done so even now. Already the grim story of the air raids on London is fading from the memory, and the authorities are hard put to it to make the public realize that the threat of invasion is still present. Despite some repetitions, perusal of these pages may well serve as a reminder, not so much of dangers past as of the need for continued vigilance. They will be of even more interest in the future, when those who come after us will be as curious to learn how we comported ourselves as we are to know of our predecessors' behaviour during the Napoleonic wars. Nor will admiration be lacking for the quiet courage displayed. "Dr. Weymouth," realizing in time the paralysing effect the war would have on West-end practice, found a new field for his activities at Broadcasting House. In his work there he came into contact with many personalities of present-day interest, of whom he draws attractive thumbnail sketches. The critics of the B.B.C. can learn from him of the courageous efforts in the face of great difficulties that are made to ensure a steady stream of information to an insatiable public.

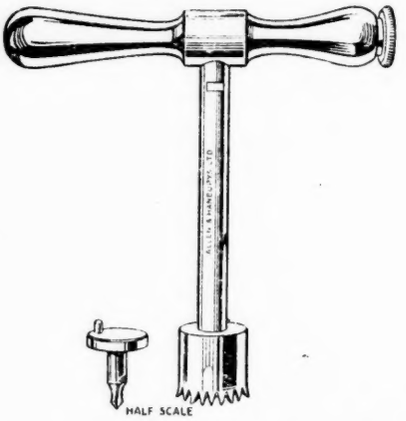
Preparations and Appliances

A MODERN TREPHINE

Surgeon Rear-Admiral CECIL P. G. WAKELEY, C.B., D.Sc., F.R.C.S., writes:

Although it must be admitted that the trephine has been largely replaced in neurosurgery by the brace and burr, yet there is still a definite place for a good trephine in war surgery, especially in the Royal Navy, where emergency operations on the head may have to be carried out on board ship.

This trephine, which has been made for me by Messrs. Allen and Hanburys, has teeth similar to those on a carpenter's saw. They are double set—namely, alternately in and out, as shown in the figure. The teeth of the trephine are thin and therefore



sharp, and the setting ensures the instrument clearing as it cuts its way through. This renders cutting easier and prevents jamming. The central pin has a drill-shape point which enters bone easily, and is held in position by a pin in the head projecting through the crown. This is sufficient to hold the pin in position but enables it to be easily removed.

The design ensures rapid cutting with ease, and also enables the instrument to be made of stainless steel.

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RESISTANCE TO TUBERCULOSIS

It is well known that different species of animals vary greatly in their resistance to tuberculosis. Thus one or two tubercle bacilli are enough eventually to kill the highly sensitive guinea-pig, whereas millions of virulent bacilli must be used in order to infect successfully the highly resistant mouse. Man stands somewhere between these two extremes. But even among human beings considerable differences are found among various races, as, for instance, among the white and negro populations in the United States. Much epidemiological, pathological, and experimental work is repeatedly being reviewed to explain this phenomenon. There is no doubt that views on resistance to tuberculosis have undergone much change during the last decade. The Koch phenomenon prepared us to expect "acquired immunity" in man. Its importance appeared to be vouched for by the following two series of observations. Naegeli's famous post-mortem survey in 1900 showed that about 98% of the population over 18 were infected with tuberculosis, but that only a small percentage of these died of the disease. Results of the Pirquet test among children in urban communities were later shown to be in accord with Naegeli's findings. Finally the fatal generalized forms of the disease observed during the war of 1914-18 among soldiers from communities where tuberculosis was unknown appeared to confirm the significance of immunity acquired during the primary infection by members of civilized populations. But it soon became evident that this phenomenon could not be explained as the result of acquired immunity alone. In the United States, where the white and negro populations live together, the disease among negroes is four times more fatal and much more often generalized than among the whites. Environmental conditions cannot account for these differences. Nor can lack of acquired immunity be an important factor, because the presence of progressive lesions of "the childhood type" in negroes by no means excludes the finding of associated older, caseous, and calcified primary foci (Rich,[1] Pinner and Kasper[2]). Indeed, Opie[3] found calcified primary lesions in the lungs of 92% of all negro adults he examined.

The view held at present on the relative roles of natural and acquired immunity may be described as follows (Rich,[1] Lurie,[4] Long,[5] Lange[6]). Acquired immunity undoubtedly exists, but its chief function is to lessen the effect of subsequent tuberculous infections by limiting the process to the lungs. This has been shown in rabbits by Pagel,[7 8] and it seems from the investigations of Reichle and Work[9] into the incidence of calcified tuberculous nodules in the parenchymatous organs at necropsy that the same process occurs in man. It is, however, natural resistance that determines the fate of the primary infection, largely influences the development of acquired immunity, and plays a part in the evolution of any later lesions. Natural resistance varies among races and among individuals, and is determined not by inheritance of "acquired resistance" but by the elimination of susceptible individuals through generations. This view in no way detracts from the importance of post-natal environmental conditions, which strongly modify natural resistance, whatever its basic quantum. This was obvious during the war of 1914-18, when defective nutrition led to a rise in tuberculosis mortality in both belligerent and neutral countries. It received apt illustration in the study among natives in South Africa.[10] The natives of the Rand were definitely not "virgin soil": fully 50% of the healthy natives reacted to 1 in 1,000,000 dilution of tuberculin; if they stayed in their kraals the disease often remained quiescent, but when they were exposed to the overwork, undernourishment, and unaccustomed conditions in the mines they often succumbed to a rapidly fatal tuberculosis, characterized not only by massive caseation of the tracheobronchial glands but also by extensive caseation of the abdominal lymph glands, with massive caseating tuberculosis in the liver and spleen.

Nevertheless the relative importance of environmental factors and genetically inherited resistance remains difficult to interpret in human studies, as was shown in the investigations of Diehl and Verschuer[11 12] into tuberculosis in identical and non-identical twins (Lange[13]). Attempts have therefore been made to study resistance in animals. Wright and Lewis[14] investigated guinea-pig families that had been inbred for fourteen generations by brother-and-sister mating. A critical analysis by Hill[15] showed that one family was genetically endowed with much greater resistance to tuberculosis than the others. Prompted by this work at the Henry Phipps Institute, Lurie decided to continue investigations into rabbits. The stimulus came from the observation that, whereas the vaccination of rabbits with living human bacilli protected them against naturally acquired bovine tuberculosis for the first six months after the beginning of exposure, at the end of a year some non-vaccinated rabbits failed to develop tuberculosis, whereas nearly all the vaccinated animals did. This suggested that the natural innate resistance of some rabbits was greater than the acquired immunity of others. The detailed results of the investigation, which have continued for over seven years, have now been published.[16] Lurie studied the tuberculosis resulting from various modes of infection in generation after generation of six rabbit families inbred by brother-sister or parent-offspring mating and maintained under uniform environmental conditions. The six families fell into three groups: uniformly highly resistant, uniformly highly susceptible, and others intermediate in resistance. The resistance was found to be a function of genetic constitution, and could be overwhelmed by large doses of bacilli. The genetic constitution *per se* determined whether under given conditions of natural respiratory contagion rabbits acquired (*a*) rapidly progressive primary generalized tuberculosis, (*b*) localized chronic ulcerative pulmonary tuberculosis, corresponding to the common type of disease seen in the human adult, or (*c*) a disease of a character intermediate between these two extremes.

Here we have something new. It was already known that acquired immunity influenced the type of lesion formed, and now there is evidence that natural resistance may play a similar part. Lurie points out that the disease types

1 *Disease of the Respiratory Tract*, Philadelphia, 1936, p. 215.
2 *Amer. Rev. Tuberc.*, 1932, **26**, 463.
3 Ibid., 1924, **10**, 249.
4 *The Cyclopedia of Medicine, Surgery and Specialities*, Philadelphia, 1936, p. 480.
5 *Arch. Pathol.*, 1941, **32**, 122, 286.
6 *Die Naturwissenschaften*, 1936, **24**, 802.
7 *Brit. J. Tuberc.*, 1936, **30**, 204.
8 *J. State Med.*, 1937, **45**, 63.
9 *Arch. Pathol.*, 1939 **28**, 33.
10 *Publ. S. Afr. Inst. med. Res.*, Johannesburg, 1932, **5**, No. 30.
11 *Zwillingstuberkulose, Zwillingsforschung und erbliche Tuberkulosedisposition*, Jena, 1933.
12 *Der Erbeinfluss bei der Tuberkulose*, Jena, 1937.
13 *Z. Tuberk.*, 1935, **72**, 241.
14 *Amer. Naturalist*, 1921, **55**, 20.
15 Med. Res. Cncl. Spec. Rep. Series No. 1936, London, 1934.
16 *Amer. Rev. Tuberc.*, 1941, **44**, Suppl. to Sept. issue.

acquired by the rabbit families of varying inherited resistance were essentially analogous to the different types of tuberculosis developed by different human ethnic groups. How far results obtained in rabbits by mating of an intimacy unknown among civilized human beings may be used in interpreting the factors influencing tuberculosis in man is a matter for debate. But at all events it would seem premature to postulate that the apparently varying clinical manifestations of primary tuberculosis noted in adults by some authors in America, and differing from those described by Scandinavian workers, are due to the genetically higher resistance of the North Americans (Israel *et al.*[17]). If that were indeed the explanation similar differences should also be noted in the lesions of primary infection in childhood. There is ample evidence that this is not the case (for instance, Terplan[18]).

MODERN VIEWS ON BRIGHT'S DISEASE

There must still be many physicians who feel that the subject of kidney disease is in a state of confusion. Classification is different in almost every textbook, and new names for various types or stages of kidney disease appear with embarrassing frequency. There are two chief reasons for this. The first is that certain types of nephritis progress slowly, with latent periods, for many years, so that the patient is rarely studied from first to last by the same observer. Secondly, many types of kidney disease, and indeed cases of hypertension, come to resemble each other very closely in their final stages, so that unless the clinician has seen them from the start he cannot clearly differentiate their varied origins. The pathologist, too, has in the past been led astray by findings which are now known to be a common end-result of several different conditions. There has, moreover, been too great a tendency for artificial distinctions to be based on one or two clinical, pathological, or chemical findings, instead of a study of the natural history of these diseases as a whole. Both those who have suffered from this confusion in the past, and those who have studied more intensely the vagaries of nephritis, will welcome the publication[19] by Prof. Arthur Ellis of his Croonian lectures on "The Natural History of Bright's Disease." Prof. Ellis has spent many years studying this difficult subject in all its aspects, and gives us a clearer and simpler, and at the same time a more satisfying, conception of nephritis than has been presented before.

Ellis points out that there are two main types of nephritis which are distinct from their beginning and throughout their course. To avoid introducing new terms or altering the significance of old ones, he calls these two main diseases simply Type I and Type II nephritis. Type I nephritis in its typical early stage is what is ordinarily known as acute nephritis, or by other observers as acute diffuse, acute glomerular, or acute haemorrhagic nephritis. Its main characteristics are its abrupt onset, usually slight or moderate oedema, rise of blood pressure, and albumin and blood in the urine. The degree to which any or all of these features are present varies from case to case. There is a natural tendency to recovery (over 80%) and recovery is complete. But Ellis points out that the recovery rate is much influenced by proper treatment in the early stages. Type I nephritis is associated with an infection in the great majority (84%) of cases, and usually follows the infection after an interval of one to three weeks. It is predominantly a disease of young persons. In fatal cases some patients die in the early stages of acute suppression, heart failure, or of the infection which has led to the nephritis. Others make a temporary recovery but are left with a persistent albuminuria, and in the course of years gradually develop hypertension and renal failure, presenting at length a picture very like the end-stage of other forms of kidney disease, and of malignant hypertension.

Type II nephritis, on the other hand, is insidious in its origin. The patient is not ill in the initial stages, but notices a gradually increasing tendency to oedema, which may become widespread and extreme. This disease occurs at any age, is only rarely associated with an infection, and has a very poor recovery rate (under 5%). In some cases the blood pressure is raised from the start and there is blood in the urine. In others the blood pressure remains normal for long periods and haemorrhage is minimal or absent. These variations correspond with what have been known in the past as subacute nephritis on the one hand, and nephrosis on the other. The more hypertension and haematuria are in evidence the quicker is the course of the disease. Ellis shows that the pathological distinctions between Type I and Type II nephritis support the clinical separation of these two groups. Eventually all cases of Type II nephritis, even the milder ones with an initial normal blood pressure, progress towards the same final stage of hypertension, retinitis, and renal failure. In his second lecture Ellis deals with the cases which start as "essential hypertension" and in which no sign of renal involvement is, to begin with, apparent. Here we have the benign and the malignant form, the latter only very rarely a consequence of the former and usually occurring in younger persons (40 to 45) and leading to death within two years of the first symptoms. Papilloedema is the main criterion by which the two varieties of hypertension are distinguishable.

In the third lecture Ellis describes the work of Wilson and Byrom,[20] which originated under his guidance, on the vicious circle in Bright's disease. By experiments based on the technique of Goldblatt these observers were able to show conclusively that hypertension not only may be caused by diminution of renal blood supply but in turn actually leads to necrosis of arterioles in the kidney and elsewhere, which thus still further decreases the renal blood supply and aggravates the hypertension. This is the key to the understanding of the end-stages of so many forms of kidney disease. Acting in different ways and starting from different causes, they produce a gradual diminution in renal blood supply, which leads to hypertension and thus initiates the vicious circle. So nephritis, pyelonephritis, pregnancy toxaemia, essential hypertension, polycystic kidney, and a number of other conditions may all present in their final stage a closely similar clinical picture—the so-called chronic interstitial nephritis of older authors.

INEFFICIENT STEAM STERILIZATION

We have referred on several recent occasions to warnings by various authors that sterilization by steam under pressure has by no means the cast-iron reliability usually credited to it. Failure may be due either to misuse, which usually means inadequate air discharge or unduly tight and massive packing of the materials to be sterilized, or to faulty design of the autoclave itself. The discovery that steam sterilizing apparatus is not functioning properly is made in various places from time to time, usually causing consternation and surprise among those less familiar with the possible faults in such apparatus and the pitfalls in its use. Such a discovery was recently made

17 *J. Amer. med. Ass.*, 1941, **117**, 839.
18 *Amer. Rev. Tuberc.*, 1940, **42**, Suppl. to Aug. issue.
19 *Lancet*, 1942, **1**, 1, 34, 72.
20 *Quart. J. Med.*, 1941, **10**, 65.

at the Army School of Hygiene, when one of a number of high-pressure steam disinfectors offered for sale to the War Department was tested there. The story of this test and others which followed is told by Lieut.-Colonel A. G. Gadd and Major A. W. Turner, both of the Royal Engineers, to whom the medical profession must remain indebted for a new solution to a problem which in some ways may be said to have baffled us. The original disinfector tested had a vacuum ejector and a steam supply at 15 lb. It was tested by placing indicator tubes in different parts of its scheduled load of 60 blankets: no tubes changing colour at a higher temperature being available, these were tubes changing at 100° C., a temperature well below that which should be attained. Five out of ten tubes failed to "turn," and the same result was obtained in a second test; increasing the steam pressure to 20 lb. and lengthening the time did not have a satisfactory result, nor even did modifications in the design introduced by the makers on hearing of this failure. Four other disinfectors of different makes were then tested in the same way, three being worked by steam under pressure and one by current steam; all failed by this test, indicating insufficient penetration of a normal load by steam to raise the whole of it even to a temperature of 100° C.

As the authors point out, these indicator tubes are regularly changed throughout the load in the simple field disinfector, in which steam merely passes into the top of a chamber packed with blankets or uniforms and out through the bottom. What is wrong with all the larger models they tested is that the load forms a compact mass in the central part of the chamber, with a wide space for steam to circulate freely round it, a line of much less resistance than that through the load, and to achieve full penetration the steam must be made to pass through the load itself. They therefore constructed a cylinder to replace the open frame in which materials are usually packed and run into the disinfector; this cylinder had an inlet for steam above and an outlet leading to the exterior below. No vacuum was used, steam being admitted to the main chamber and first allowed to escape through an outlet in this. This was then closed and the only channel open to the steam was through the inner cylinder, via the inlet on its upper surface and through its contents to the second outlet connecting it with the exterior. When pure steam issued, this was closed and the pressure allowed to rise. In a disinfector so modified and worked, not only a normal load of blankets but overloads and rolls of blankets, which are penetrated with more difficulty than blankets packed loose, were disinfected throughout as indicated by tubes changing colour not at 100° C. but at 115° C. This invention is to be patented, and on the information given deserves general adoption for dealing with materials of this kind. It is not directly applicable to surgical materials so long as these continue to be packed in metal drums, since the main point of the device is that the material to be sterilized shall form a single mass with no open spaces through which steam can pass easily. The very reverse of the conditions desirable in an autoclave of the ordinary type are necessary; instead of separation and loose packing to encourage permeation by steam, uniform and presumably fairly tight packing is desirable in order to close all easy channels. If this principle could be applied to sterilization for surgical purposes it would certainly make for greater safety. Metal drums have in fact been condemned by some authorities, and the fabric containers suggested as an alternative could be packed satisfactorily in an autoclave of the new type suggested.

[1] *J. R.A.M.C.*, 1942, **78**, 1.

BELLADONNA ROOT FOR PARKINSONISM

Extract of belladonna root does not seem to have been used for the treatment of Parkinsonism nearly so extensively in this country as on the Continent and in the United States, and recent American experience suggests that it deserves a more thorough trial. Raeff in 1926 described his treatment of Parkinson's disease with a white-wine extract of Bulgarian belladonna root, but later workers showed that there was no particular virtue in the soil of Bulgaria and that the root of belladonna grown elsewhere was just as effective. All the alkaloids of belladonna have been used separately in the treatment of Parkinsonism for many years; the value of the belladonna root extract appears to reside not in any new alkaloid but in the synergic action of the three alkaloids atropine, hyoscyamine, and scopolamine combined in certain proportions. Tablets containing these alkaloids in doses of hyoscyamine 0.4507 mg., atropine sulphate 0.0372 mg., and scopolamine hydrobromide 0.0119 mg. are marketed in the United States under the trade name "rabellon" (Sharp and Dohme), and according to Price and Merritt[1] this preparation is as effective as the white-wine extract of Bulgarian belladonna root and as a desiccated white-wine extract of *U.S.P.* belladonna root. These authors treated 71 Parkinsonian patients. In cases with mild symptoms 43% were moderately improved and 47% were greatly improved; in severe cases 59% were moderately improved and 19% greatly improved. Fabing and Zeligs[2] similarly found no difference between Bulgarian and *U.S.P.* belladonna roots. These workers obtained even more striking results. They define maximal improvement as amounting to complete or almost complete economic and social rehabilitation; and this gratifying result was obtained in 54% with moderately severe and 25% with very severe Parkinsonism, figures which it is safe to say have not been equalled by any other form of treatment. Gayle and Pettis[3] also used "rabellon" and found that the mild mental symptoms were benefited in most cases as well as the physical symptoms. The usual initial dose was 0.1 mg. of the combined alkaloids given one to four times a day, and the dose was increased by a similar amount at intervals of one to three days until untoward symptoms appeared, when a gradual reduction was made until the optimum dosage was found. It is generally agreed that the treatment is most effective in post-encephalitic cases; older patients are often unable to tolerate an effective dose.

DELINQUENCY IN GIRLS

The numbers of delinquent girls are only a fraction of those of delinquent boys, but the problem they present is almost as serious. Valuable work has been done on them in this country, notably at Aylesbury; but too many young women are sent to prison, and criminologists are generally agreed that this treatment makes more criminals than good citizens. Mr. Sven Ahnsjö, of the State Institute of Human Genetics and Race Biology at Uppsala, has recently concluded a thorough and valuable investigation[4] of the prognosis in girl delinquency. He analysed the case histories of 2,448 girls in various institutions with the object of ascertaining the immediate causes of their detention and the prognosis in different types of delinquency, and of assessing the importance of such factors as age of admission, length

[1] *J. Amer. med. Ass.*, 1941, **117**, 335.
[2] Ibid., 1941, **117**, 332.
[3] *Amer. J. Psychiat.*, 1941, **97**, 1175.
[4] *Acta paediatr.*, Stockh., 1941, **28**, Suppt. 3, 335.

of detention, illegitimacy, and surroundings. In addition, he has delved deeply into the voluminous literature. As might be expected, the incidence of delinquency in girls is three times as high in towns as in the country. The commonest form of delinquency is sexual, with 31%, next come offences against property, with 27%, general delinquency accounts for 15.6%, and other groups are small. The proportion of delinquents who are illegitimate is higher than in the general population, partly because the heredity of illegitimate children tends to be worse, and partly because they have an inferior education in the broadest sense of the word. The figures suggest that a good home may be a preventive factor, and bad home conditions are certainly associated with delinquency; but so many other factors complicate the relationship that no hard-and-fast conclusions can be drawn from the evidence on environment. The inquiry into prognosis was based chiefly on the question to what extent it had been found necessary to redetain girls who had been discharged, to warn or sentence them for vagrancy, or to punish them for crime. Redetention was more frequent in the group who had committed crimes against property than in the group of sexual offenders—22.5% and 16%. Warning for vagrancy was not frequent: 3.5% during the first ten years, and less afterwards. The proportion sentenced to prison for vagrancy was fairly constant between 1.8 and 1.5% during the ten years after discharge; the incidence of vagrancy seemed to be much the same for various types of delinquents. The figure of punishment for crime in the first five years after discharge was 7%, but in the second five-year period only 3% and in the third 1.5%. Girls discharged from detention homes seemed to commit crime most frequently in the third year after release, but those discharged from reformatories in the first year: the difference might be explained by the greater use of re-detention among the girls discharged from detention homes. The group who had committed property crimes were more liable to recidivism than the sexual or general delinquents. The statistics of those girls who did not offend again in any way showed few significant differences between various types of delinquency, except a suggestion that the prognosis for sexual offenders may be slightly better. Girls detained early in life tended to have a less satisfactory prognosis. Somewhat surprisingly, legitimate children detained for property crimes have a less satisfactory prognosis than illegitimate children of the same group. There seems to be no prognostic difference between town and country delinquents, or between girls from different forms of broken homes, or girls whose parents have different psychological qualities. Re-detention was more frequent among girls from bad homes, but this group had a lower frequency of warnings for vagrancy and of punishments. Psychopaths came more frequently under punishment than the intellectually inferior. Girls discharged from institutions seem to marry as readily as, or even more readily than, girls in the general population.

MECHANISM OF CERTAIN SUDDEN DEATHS

Some forms of sudden death in which the true facts may be missed, thereby leading to an inaccurate inquest verdict, were described by Dr. Eric Gardner in an interesting paper to the Medico-Legal Society. A number of sudden deaths occurring in water or by choking as a result of spasm of the larynx were in his view due to shock, meaning by that word a fall of blood pressure due to diminution of volume of blood returned to the heart. Most deaths that occur in water are due to asphyxia from inhalation of water into the lungs, but bodies have been found in water in which on examination there was no evidence of asphyxia or drowning. In some of these cases there was probably a degenerative change in the heart and blood vessels, and cold and exposure were merely the terminal factors causing death, but in others Dr. Gardner was convinced that death had occurred from shock. These shock deaths, he said, were not due to cold, for they were no more frequent in winter than in summer; they were uncommon in people who got out of their depth when bathing, unless indeed they were performing some "stunt," and most of them occurred in people who entered water unexpectedly, especially if they had been sitting on the edge of a tank or bath and fell into it backwards. There is a natural disposition on the part of the police to assume that if a person is found dead in water so shallow that he had only to stand up in order to walk out of it, it must be a case of suicide, but the post-mortem examination may show that he died too quickly to be able to save himself. Dr. Gardner also mentioned deaths from choking in elderly inmates of mental institutions who were prone to snatch food and cram it into their mouths, but sometimes in other persons who inhale regurgitated food during unconsciousness after alcoholic indulgence or an anaesthetic, and now and then in persons apparently healthy who choke and die during a meal. Choking may result in nothing more serious than a fit of coughing, or it may cause death from asphyxia or shock. Some quite small particle of food may be found to have lodged in the larynx and caused a fatal laryngeal spasm, the spasm probably being merely an exaggeration of the normal protective reflex of the larynx. Such death from shock occurs in persons in whom the adverse stimulus has provoked an abnormal and widely spread reflex. Deaths due to shock sometimes result from a huge mass of food impacted in the larynx, the fatality occurring before any signs of asphyxia have time to develop, or death from shock may occur when the whole bronchial tree is flooded by soft inhaled food. Dr. Gardner summarized his conclusions in these cases by saying that the deaths were due to a condition of shock occasioned by a fall of blood pressure owing to a diminished volume of blood passing through the heart to the arteries, this diminished blood volume being due mainly to a loss of muscle tone resulting from depressive impulses acting on nerve centres in the central nervous system, reaching them from distant parts of the body and often occasioned by painful stimulation of those parts. He added some further interesting remarks on suicidal hangings. In these cases the constricting rope might press on several vital areas in the neck so that more than one factor operated to cause death. There was evidence that some suicides by hanging lost consciousness the instant the rope took the weight of their body. It was rare for the carotid vessels on both sides to be occluded in suicidal hanging—the knot was generally on one side—and occlusion of the great vessels on one side of the neck did not cause sudden death. Yet death did occur, and he suggested that possibly pressure on the vagus nerve, which ran behind the great vessels, might cause the heart to slow rapidly to a standstill. Squeezing the carotid sinus—the dilatation on the internal carotid artery immediately after the division of the common carotid—would reduce blood pressure and reflexly slow or perhaps even stop the heart. Dr. Gardner mentioned that he had had long talks with a Japanese instructor of jujitsu, who claimed that by holding the sinus, which he could do with finger and thumb of one hand, he could render anyone unconscious in three seconds and kill him in twenty. Dr. Gardner submitted himself as a victim, and was able to bear testimony that, so far as the unconsciousness was concerned, he had spoken truly.

THE NATION'S HEALTH IN WARTIME

The Ministry of Health has issued a "Summary Report" for the two years from April, 1939, to March, 1941, including information about some developments of later date to which the war lends special interest.[1]

Communicable Diseases

The number of cases of cerebrospinal fever in England and Wales, which in 1939 was 1,500, rose in 1940 to 12,771, the highest figure ever reached. On the other hand, the mortality rate was low. The incidence again rose in the March quarter of 1941, but less steeply: 4,329 cases with 891 deaths, compared with 5,097 cases and 1,150 deaths in the March quarter of 1940. There has been no increase in the prevalence of scarlet fever and diphtheria, and there were fewer cases of diphtheria in 1940 than in 1939. Measles and whooping-cough were compulsorily notifiable in 1940 for the first full year, and the number of notifications of measles was 409,521 and of whooping-cough 53,607. In 1909 the number of deaths from the enteric group of fevers was the lowest ever recorded, and the rise in 1940 was due largely to paratyphoid. In 1940 there was one case of small-pox and one case of typhus, and two cases of malaria were contracted in this country.

An increase in deaths from respiratory tuberculosis has been noticed among young women, and the downward trend of mortality from this disease has been checked. There has also been some increase in venereal disease. The figure for new infections of syphilis for 1940—the wide use of the sulphonamide drugs makes the figures for gonorrhoea less reliable as an index—was lower than that for 1934.

Mothers and Children

The fall in infant mortality has been checked, but in the second year of war it was only 56 per 1,000 live births, as compared with 110 in the second year of the last war. The fall in the maternal mortality rate has continued, and the figure of 2.61 per 1,000 total births in 1940 was the lowest recorded. This is ascribed partly to the advances made in the treatment of sepsis and partly to the improved standard of domiciliary midwifery and the devotion of practising midwives, who attend 90% of the births in this country and are in sole charge of 65%. By the end of 1941 the Ministry had set up 117 emergency maternity homes for evacuated women, with 21 others in reserve, and 40,000 babies had already been born in them. Near many of these homes were established ante- and post-natal hostels where the women could be accommodated before and after confinement. Residential nurseries to the number of 335, with over 10,000 nursery places, have also been established for evacuated children under 5.

War Emergency Services

By March, 1941, the emergency hospital scheme embraced 80% of the hospitals of the country; those remaining outside were chiefly small or highly specialized hospitals. The scheme has been continually widened. At first it was for air-raid casualties and military sick and casualties for which the Army could not find beds; then it came to cater for civil defence workers and others suffering from war service injuries, and later for patients transferred from hospitals in urban areas where accommodation is needed for casualties, and for evacuees, war workers, and others in the areas where the hospitals are situated.

"Through the growth of the emergency hospital scheme a new conception of hospital treatment can be seen emerging. The old, all-purpose conception of a 'general' hospital has given way to a pattern of hospitals in which some specialize on one service, some on another. The patient goes to the hospital best suited to his needs, instead of, as would have happened before the war, remaining in the first hospital available."

Over 70 special treatment centres are attached to emergency hospitals, and patients are transferred to them immediately the need for special medical or surgical treatment is clear. The forms of special treatment include orthopaedic and fracture surgery; maxillo-facial, thoracic, and neuro-surgery; and treatment for burns, effort syndrome, and skin diseases.

The number of aid posts established up to March, 1941, was 1,904, and the number of casualties which had passed through them was 67,951. This leaves out of account the number (not stated) dealt with at 5,800 first-aid points in small towns and villages and by 995 mobile first-aid units.

By the end of January, 1941, 97% of the larger shelters (occupied by 500 or more sleepers) were equipped with medical aid posts, and of 78 tube stations in London used as dormitories, 72 had such posts. Not even at the height of the raiding in the autumn of 1940 was the proportion of population using the London shelters greater than 9% of the population of the metropolitan boroughs (but that would mean more than 400,000 people).

[1] Cmd. 6340. H.M. Stationery Office. (9d., post free 10d.)

Reports of Societies

AVASCULAR NECROSIS

At a meeting of the Section of Radiology of the Royal Society of Medicine a discussion on avascular necrosis in fractures, dislocations, Perthes's disease, congenital dislocation, and monarticular osteo-arthritis of the hip was opened by Mr. R. Watson-Jones and Dr. James F. Brailsford.

Mr. WATSON-JONES said that the femoral head derived its blood mainly from the capsular vessels which entered the neck. Rupture or thrombosis of these arteries causing avascular necrosis was the pathology of degenerative arthritis after fracture of the neck of the femur, traumatic dislocation, and epiphysial displacement. It was also the pathology of Legg-Perthes's disease and probably of many cases of unexplained monarticular arthritis of the hip-joint. There were five radiographic signs of avascular necrosis in nailed fractures of the femoral neck. (1) Within a few weeks the head appeared relatively dense because it did not participate in disuse decalcification. This sign was masked by early functional activity, which minimized disuse calcification. Films should therefore be taken at the 6th, 8th, and 10th weeks. If *one* film showed a dense head, the blood supply was impaired and necrosis would supervene, varying from rapid disintegration of the bone to slowly progressing erosion and arthritis after several years. (2) Within a few months the nail showed increasing penetration of the head, especially if weight-bearing was permitted; necrosis might still be minimal, and protection from weight-bearing deferred the onset of arthritis. (3) After several months the nail ploughed upwards and forwards through the head; necrosis was more complete, the nail must be removed and a bifurcation osteotomy performed. (4) After 6 to 12 months incomplete union of the fracture despite successful and accurate nailing was evidence of an avascular head. If the nail had been inadvisedly removed and displacement had therefore recurred, re-nailing was not indicated; a bifurcation osteotomy was better. (5) After several years degenerative arthritis proved that the head was avascular even if earlier signs were overlooked.

Avascular necrosis developed in about 30% of femoral neck fractures treated by operative reduction which damaged capsular vessels, and in about 15% of fractures treated by extra-articular nailing. The nail itself played no part. Necrosis was no less frequent and no less severe when no nail was used. Similar necrosis occurred in over 30% of recent dislocations and nearly 100% of overlooked dislocations where operative reduction and capsular dissection were necessary. Legg-Perthes's disease was not a hypothetical "osteochondritis," but an avascular necrosis of the upper femoral epiphysis, which might be due to fracture of the neck of the femur in children, traumatic dislocation of the hip with rupture of the capsule in children, operative reduction of a congenital dislocation with dissection of the capsule, any operation on the hip of a child which involved capsular injury, or any thrombosis or embolism of capsular vessels. Treatment by immobilization in plaster was worthless. Coxa plana could be avoided and a normal contour of the head preserved by traction and recumbency for twelve months or two years, but since the regenerated articular cartilage was likely to be imperfect it was probable that late arthritis might still supervene after many years. The frequency of osteo-arthritis of the hip-joint was due to the precarious blood supply of the femoral head, the vulnerability of capsular vessels, and the lack of anastomosis between these vessels and other sources of blood supply. Osteo-arthritis of the hip-joint was the adult form of

Legg-Perthes's disease. Each was an avascular necrosis due either to obvious sources of impaired blood supply such as fracture, dislocation, etc., or to concealed sources such as embolism of capsular vessels or thrombosis from minor injury or infection.

Dr. BRAILSFORD said that disturbance of the vascularity of bone by trauma, emboli, inflammatory or neoplastic changes might result in avascular necrosis of the affected bone. Avascular necrosis became associated with osteoporosis of the adjacent bone and the phenomena known as osteochondritis, though it was not always a recognizable factor in the latter. Radiographs might show evidence of disturbance of the vascularity of a fragment of bone within six weeks of the application of the causal factor. If the signs of osteochondritis developed in association with avascular necrosis, the necrotic fragment would be recognizable by its relative density throughout the whole period of reorganization—i.e., for upwards of four years. It was the long period of bone plasticity in osteochondritis—one to four years—to which the clinician should give due attention, for disregard of this was responsible for the deformities caused by stresses and strains on the inadequately immobilized joint surfaces. Avascular necrotic bone undergoing substitution displayed a plasticity which persisted over a similar period. Osteochondritis presented a characteristic radiographic timetable: if the affected part was spared from stresses and strains during plasticity, regeneration was perfect. The sequelae of (*a*) Legg's disease, (*b*) surgical trauma in reducing congenital dislocation of the femoral head, (*c*) dislocation of the femoral head, (*d*) fractures of the femoral neck, and (*e*) displacement of the femoral diaphysis from its capital epiphysis were not identical: they varied from complete restoration to complete destruction of the joint, though avascular necrosis might occur in many of these conditions.

Radiographs showed evidence of pathological changes in the metaphysis of the upper femur in some cases before disintegration and displacement produced the lesion known as "slipped epiphysis." Due attention to this radiographic finding and the prompt institution of protective measures might prevent the displacement and the consequences of avascular necrosis of the epiphysis. Osteochondritis dissecans caused symptoms when the fragment became necrotic or displaced: the lesion might be recognized radiographically several years before. Temporary retention of calcium by a fragment of bone did not indicate that the fragment was necrotic—it might fuse without any of the secondary changes characteristic of necrotic bone. Avascular necrosis of bone could be detected radiographically by the greater density of a fragment associated with decalcification of adjacent bone and by the serial radiographic changes which showed gradual absorption of the dense and apparently structureless fragment. Hypercalcification of bone did not in itself indicate avascular necrosis. As long as the necrotic bone was present decalcification and plasticity of adjacent bone would exist; hence the indication was that necrotic bone in traumatic cases should be removed as soon as detected, if for any reason the part could not be efficiently mobilized until complete restoration could be detected radiographically. The destructive changes in the hip-joint due to avascular necrosis following internal splintage (pinning, etc.) were worse than after any form of external immobilization. The pin gave a false sense of security which lessened the period of freedom from weight-bearing; the latter, and perhaps added vascular damage by the pin, probably accounted for these disasters. No sign of avascular necrosis could be detected during the first month after the trauma; this latent period would be extended to many months if the femoral neck was pinned and the limb allowed to bear weight. Recognition of avascular necrosis, and thereby prevention of its important complications, would be facilitated if after pinning the patient rested in bed with the limb immobilized for 3 months.

The Heberden Society has decided to make a special award of the Heberden Medal, with an honorarium of 20 guineas, for original work on the problem of low back pain, with or without sciatic neuralgia, which in its opinion represents an advance in treatment likely to lead to a reduction in the present average period of disability. Theses should be submitted to the Secretary of the Society, c/o the B.R.C.S. Clinic for Rheumatism, Peto Place, N.W.1, before December 25, 1942.

Correspondence

Child Health

SIR,—Prof. Charles McNeil's constructive paper (April 4, p. 429) and your excellent leading article invite comment by the obstetrician who is concerned with the child during the early and formative periods of its life. As Prof. McNeil points out, preventive paediatrics in this country is second-rate largely because the medical schools and universities have lagged behind the public health services. The present situation can be understood only when we recall the history of the child welfare movement. In 1933 I[1] wrote that "this movement owed its genesis in the main to a social conscience stirred by the amount of ill-health revealed in school children when, consequent upon the enactment of compulsion in education, they first came under the organized supervision of the community. This movement had grown to be national, and it had become an important charge on municipal health activities before it had created a ripple on the surface of organized medical opinion. It was only as recently as 1923 that out of deference to this strong social conviction the General Medical Council added the subject of infant hygiene to its recommendations for the revised medical curriculum. Despite this . . . the medical schools even now make for the most part only a very inadequate provision for the teaching of their students in matters of infant health. . . . It is unfortunate that in regard to this beneficent social awakening to the value of child life and health the organized medical profession has lost a great chance of leadership." Prof. McNeil still finds it necessary to make similar strictures in 1942!

I would next emphasize the dual role in respect of teaching and research which the maternity hospitals must assume in the new organization visualized by Prof. McNeil. *Education.*—Dealing, as they do, with the child at the most critical time of its development (ante-natal and post-natal) the maternity services must co-operate in an important degree in the education of the student, the doctor, the nurse, and the mother in child health. Where possible the maternity hospital should be immediately linked with the child welfare clinic. In a large service devoted to teaching there are obvious advantages in a further intimate linking with the children's hospital. These interlocked services should be staffed by paediatricians of experience. In these ways only will a continuity and completeness of paediatric opportunity be provided for the student, the doctor, and the nurse. As a teacher concerned with postgraduate training I am convinced that such centres should be set up with the special object of training the doctors and nurses required for the paediatric services.

Research.—Prof. McNeil speaks of the "hard intractable core of infant deaths." Stillbirths and neonatal mortality imply an annual loss of over 6% of all births, and to this has to be added a considerable but unknown percentage loss by abortion from similar causes. In this field obstetrics must join hands with preventive paediatrics, and this combined effort is possible only where the paediatric organization is built round the maternity hospital and where the obstetrician and paediatrician unite in a continuing study of the child from its earliest days. While this high ante-natal and neonatal mortality is "intractable" we must not accept it as insoluble. Indeed, some recent investigations have raised the possibility that it is derived in part from faulty maternal nutrition. Thus observers in Toronto[2] found that in mothers on a "poor diet" 17.4% of the pregnancies ended in abortion, premature birth, or stillbirth, while in those on a similarly "poor diet" but reinforced with the required food supplements the figure was 2.2%. Utheim-Toverud in Norway[3] has claimed similar results, his respective figures being 27.2% and 3.1%. Both in Toronto and Norway it was further claimed that the subsequent health of the children of well-fed mothers was superior to that of those born of poorly fed mothers. The report of a recently completed investigation on similar lines by the People's League of Health in this country and involving the study of over 5,000 mothers will be pub-

1 Young, J., *Lancet*, 1933, **1**, 61.
2 Ebbs, J. H., Tisdall, F. F., and Scott, W. A., *J. Nutrit.*, 1941, **22**, No. 5, 515.
3 Utheim-Toverud, K., *Acta paediatr.*, Stockh., 1939, **24**, 116.

lished shortly. As chairman of the committee concerned, which contains representative authorities on obstetrics, nutrition, and medical statistics, I may anticipate publication only so far as to state that the results are believed to be relevant and valuable.

Such pioneer investigations directed to the very foundations of racial health open up vast new possibilities for the future. To meet our expanding opportunities we must organize our resources. I have testified to my belief in the whole-hearted and imaginative support of the public health services, and we can be sure the hospitals would respond to wise guidance. With Prof. McNeil we must hope that the medical schools will realize the magnitude of both opportunity and responsibility with which they will be faced in this critically important sphere of post-war preventive medicine.

Finally I can endorse from personal observation Prof. McNeil's references to the efficiency of the infant health services of Holland. On behalf of the Ministry of Health I visited that country some years ago with two colleagues to study the factors underlying its strikingly low maternal mortality. We then pointed to the valuable lessons it had to teach in preventive obstetrics, just as to-day Prof. McNeil invokes its high example in preventive paediatrics. In our published report[4] we describe the functions and the excellent training of the nurses (*baker* and *krammverzorgster*) engaged in infant care.—I am, etc.,

British Postgraduate Medical School. JAMES YOUNG.

SIR,—Prof. Charles McNeil's paper is a much-needed reminder of the country's apathy about child nurture. For the most part the doctors and nurses upon whom mothers rely for advice pay little more than lip service to the idea of breast-feeding. I think it unlikely that in this part of Scotland more than 1 child in 10 is breast-fed to the sixth month, even with supplementary feeding. No doubt artificial feeding is not the same risk that it was when the figures were compiled which are quoted in textbooks, giving the mortality of bottle-fed infants as something like twice that of the breast-fed, but nobody can fail to be struck by the extraordinary ignorance of first principles in artificial feeding within the medical and nursing professions, to which Prof. McNeil refers. Even the two elementary rules of cows' milk modification—i.e., of dilution and of boiling—which were responsible for the first big improvement in results have been forgotten, and there is a constant resort to quite arbitrary standards or to formulae made up by the firms which sell dried milk. The nurse or doctor who advises such mixtures hardly ever knows any more than the mother the basis on which they are constructed. Few students at qualification have a clear conception of what are the basic rules of artificial feeding, and none, of course, has had any practical experience in prescribing them and in modifying them in accordance with results. After qualification, a minute percentage will obtain good experience with a paediatrician or an adequately trained mothercraft nursing sister. Obstetricians are a good deal to blame for this in that they assume responsibility for guiding infant nutrition without having any genuine interest in or knowledge of the subject, and make little effort to obtain such teaching for their students.

But the proper instruction of doctors and nurses in child nutrition is only part of the problem. Both breast-feeding and artificial feeding require that the mother shall have good health, repose, and reasonable facilities; these are usually lacking in most working-class households, so that nurture in the broadest sense is bound to be of a poor level, physical, emotional, and intellectual. Careful surveys have repeatedly shown that 50% to 60% of our children are brought up in households which fall well below the income standard required for a minimum adequate expenditure for health, as computed by the Ministry of Health, the B.M.A., etc.

Prof. McNeil does not mention one other serious item in infant mortality—i.e., institutional deaths. It is unfortunately true that there are very few institutions catering for the care of sick infants which have adequate buildings, equipment, and trained staff. Is it not also true that what Prof. McNeil refers to as the "intractable core" would be substantially reduced if deformities of the pelvis due to infantile rickets were eliminated?

I would like to add some points to Prof. McNeil's proposals for reform and to comment on others. (1) Training. His proposals are good, but I suggest also that all girls should be given some severely practical training in mothercraft during their last year at school by highly qualified mothercraft sisters, and that it should be made as illegal for any doctor or nurse to advise about infant feeding without proper qualification as it is for any unqualified person to give advice in obstetrics. (2) I cannot agree about the welfare clinic, which I regard as obsolete. All the advantages of a clinic in observation of a child's progress can be made in the infant's own home by a properly qualified visiting nurse, who could obtain the further help of a paediatrician when necessary. (3) Improvement of environment required for good nurture must come through the slow process of education, but immediate results could be looked for by raising the standard of living in that 25% of the population which has the lowest income and the largest percentage of children. The simplest way of doing this is through family allowances, and the time for doing this is now. When parents are no longer harassed and insecure there will be less fear of parenthood and fewer childless marriages.—I am, etc.,

Inverness. D. G. LEYS, M.D., M.R.C.P.

[4] Oxley, W. H. F., Phillips, H. M., and Young, J. (1932). Final Report of Departmental Committee on Maternal Mortality and Morbidity, p. 55. H.M. Stationery Office.

Council of the Royal College of Surgeons

SIR,—We desire to draw the attention of all who have the best interests of the Royal College of Surgeons at heart to the forthcoming election to its Council. At the present time the average age is over 62 years and three of its members are septuagenarians. The College is particularly fortunate in having at this time a President equipped at all points to guide it and shape its future destiny, but in our view the Council needs reinforcement with younger surgeons to help in shaping the policy of the College in these anxious times.

A Fellow is elected for a first term of eight years, and it is the accepted custom that he should serve a second, making sixteen years in all. Of recent years there has been an increasing tendency for Councillors to seek a third term, and it is the harmful effects of this practice we wish to bring to your notice. First, this leads to an inevitable increase in the number of members of 70 years or over, and, secondly it delays the successful candidature of men of the right type and age, so that they either abandon their hopes or apply when they are already too old. In this present election two Councillors offer themselves for a third term, both men we regard with respect and affection, while other candidates are already of such an age that the end of their first term will bring them near to the 65-year standard.

The future is unknown, but enough can be seen of the trend of affairs to leave us in no doubt that our profession must face problems of great complexity in reorganizing the whole structure of our professional lives and in regulating our relationship to the State. It seems both just and logical that those who will have to live and work in this new world should help to fashion it. For this reason we believe that the Council is urgently in need of younger men of established professional reputation and known administrative experience.

We hope that in recording their votes Fellows have already had in mind the points we have raised, and that those who have not yet voted will not fail to do so after giving careful consideration to what we believe to be the best interests of the College. If in the future its influence wanes and its counsels are no longer heard in the land, it will be useless for us—the voters of to-day—to lament, for we shall have had our chance and thrown it away.—We are, etc.,

ERIC A. CROOK.
W. D. DOHERTY.
R. M. HANDFIELD-JONES.
RUPERT VAUGHAN HUDSON.
J. BASIL HUME.
J. B. HUNTER.
G. T. MULLALLY.
GEORGE E. NELIGAN.
VICTOR RIDDELL.
W. H. C. ROMANIS.

Medical Women in the Forces

SIR,—It seems desirable to the Medical Women's Federation that some statements should be made in order to clarify the situation as to the difference in the terms and conditions offered to medical men and women serving with H.M. Forces. The Federation is most anxious that women should respond to the appeal for women doctors in the Forces, but it is profoundly

disturbed that the long-established and well-proved principle of complete equality between medical men and women is being infringed, thus creating a precedent which paves the way for continual trouble not only now but even more in the future. Briefly, the position is as follows:

(1) A medical man receives a commission *in* the Medical Services (i.e., in the R.A.M.C. or the R.A.F. Medical Branch). It is argued that he is a soldier as well as a doctor, that he may be asked to carry out certain combatant duties, and he is given general disciplinary powers.

(2) A medical woman is offered a commission *in the Women's Forces* for service *with* the R.A.M.C. and the R.A.F.M.B. It is argued that there is no authority for offering a woman a commission in the Medical Services; that a woman doctor cannot have disciplinary powers, and cannot have any combatant duties. This is not the place to enter into the validity of these arguments.

(3) The Medical Women's Federation has no grievance as to pay and allowances; on this score there is complete equality with their men colleagues, and they have "relative rank." The Federation is fully aware that women doctors with the Medical Services are as a rule working happily under their commanding officers, and that they have received fair and just treatment.

(4) The medical women, however, suffer very definite handicaps. They are *not members* of *any* Service, and they have no settled status. Regulations peculiar to them may be made at any time, since R.A.M.C., R.A.F.M.B., and other Service regulations do not necessarily apply to them. The Women's Services (Nursing, A.T.S., W.A.A.F.) each have an established organization and each woman is part of her Service; all have their status fully recognized and defined.

(5) The Medical Women's Federation is strongly of the opinion that it would work for greater efficiency and stability to grant medical women commissions *in* the Medical Services; this would ensure a generally recognized status and the protection afforded by membership of a professional body having defined conditions and established precedents. The Federation cannot see that there is any insuperable difficulty in creating if necessary a temporary Women's Section *in* the Medical Services, having appropriate functions and duties. In the event of an acute emergency, such as invasion, medical women would be expected to rise to the occasion just as medical men would do, and in such circumstances it would unquestionably be easier for all concerned if they had well-defined rank and status. (This argument applies with even more force in the event of conscription of medical women.) The Federation hopes that this course will be adopted. The present inequality of status is definitely a retrograde step, contrary to the principles which have been accepted as fundamental by the British Medical Association, and which have been found to work in the best interests of both medical men and women.

(6) The Federation feels that the course to take at present is to advise medical women to accept "relative rank" in the meantime, but *not to accept commissions in the Women's Forces*. This leaves the door open for a more equitable arrangement for any future date, whereas the acceptance of commissions in the Women's Forces will permanently put medical women in a separate category from their male colleagues.—I am, etc.,

CLARA STEWART,
President.

Unnecessary Incapacity

SIR,—The article (March 28, p. 403) by such an authority as Mr. R. Watson-Jones is most timely. It is to be hoped that it may have the immediate effect of persuading the profession and in particular the orthopaedic branch of it that the time has now come when concerted action by them is their duty, to call the attention of the medical heads of the Services to the fact that there is serious disquietude on account of the inadequacy of treatment in many cases, with consequent long periods of unnecessary incapacity, which in some cases have resulted in permanent disability. Mr. Watson-Jones's story of the air-gunner's unhappy experience after operation for removal of his cartilage is unfortunately by no means an isolated one, and I am convinced from my own experience that the majority of orthopaedic surgeons must be able to give similar examples. The lost hours of duty and the cost to the country of unnecessarily long delayed recovery present a most serious problem that must be tackled at once. In many cases, too, parents and other relatives are seriously concerned at what appears to be somewhat harsh behaviour to patients who do not make a good and rapid recovery—behaviour all the more unfair as delayed recovery is in so many cases not the fault of the patient but the fault of inadequate treatment or lack of treatment.

A case in point is that of a young officer who consulted me recently about his knee. In December, 1939, his medial cartilage was removed from his knee. After 14 days he was sent home on one month's leave. He was unable to flex his knee more than a few degrees and he walked with the aid of a stick. On February 12, 1940, he returned to duty still limping and using a stick. He made little progress towards recovery, and finally, in October, 1941—22 months after the operation—he was discharged from the Army as unfit for further service on account of the condition of his knee.—I am, etc.,

London, W.1. MORTON SMART.

Destruction of Vitamin C in Transported Hot Meals

SIR,—The Ministry of Food has provided in many parts of the country large depots for supplying homeless persons with hot meals in cases of serious bombing, and these are being used on a large scale to supply canteens, including school canteens, with hot dinners, which have to be transported considerable distances and are kept warm in a "hot-plate" installation for prolonged periods. Now it is well known that in the case of vegetables treated in this way vitamins are lost or destroyed, and on such a scale in the case of vitamin C (the scurvy-preventing vitamin) that the amount left would average from 6% to *nil* of the original quantity! It is also true to say that the persons who get these hot meals, including school children, will be depending mainly on them to obtain their supply of this vitamin so essential to health.

I suggest, therefore, that in the coming spring, summer, and autumn months vegetables should be served in the form of salads, for in salads nearly all the vitamins would remain preserved, or, if this is not possible, that ascorbic acid tablets of at least 25 mg. should be given with each meal. If something of this kind is not done, it is quite obvious that those partaking of these meals are neither going to receive the benefit that they should nor be protected adequately against a serious disease.

Since writing the foregoing it has been suggested to me that raw grated turnip, kohlrabi, or swede could be served with the hot dinners, and to these I would add raw minced parsley, mustard and cress, or watercress, mixed with mashed potatoes. If this procedure were carried out first, salads could be more gradually introduced and given in larger amount until the children got used to them. The matter is urgent, and both the Ministry of Food and the Board of Education should take appropriate action quickly.—I am, etc.,

Glossop. E. H. M. MILLIGAN, M.D., D.P.H.

How Much Vitamin D?

SIR,—The admirable letter of Dr. Helen Mackay (March 28) suggests that if cod-liver oil is short priority should be given to babies under 6 months. There is, however, a simple alternative. Cod-liver oil is presumably being issued free, or at reduced prices, primarily as a source of vitamin D. There will be no difficulties and extremely small cost involved in bringing the vitamin D content of "cod-liver oil compound" up to almost any required vitamin D content by simply dissolving calciferol in it. Without knowing the precise distribution of "cod-liver oil compound," one cannot do more than guess the amount of calciferol that would be involved in raising the vitamin D content of the product to, say, 300 units per g. in place of the present 100. But I should be very surprised if it involved an amount that would present any serious difficulty to those engaged in the large-scale manufacture of calciferol for incorporation in margarine.—I am, etc.,

Greenford. A. L. BACHARACH.

Declining Population

SIR,—Dr. Percy Stocks (March 21, p. 394) and your annotation (April 4, p. 442) almost entirely miss the danger of the present decline in the birth rate. It is not a question of the total number of the population. Whether that declines or not

is of small importance so long as it declines proportionately at all ages. Modern science has reduced the death rate and at the same time introduced means of preventing birth. The result is a great increase in the number of middle-aged and old, and a precipitous fall in the number of youth—a new and wholly artificial condition, and one which is not in being in countries such as Japan, Hitler's Germany, Italy, not to speak of India and China. In consequence of the fall in youth France owes in part her fall. We are now in great peril. The whole economy of the nation in the future must be profoundly disturbed by the excess of the aged over youth.—I am, etc.,

LEONARD HILL.

Preserving the Race

SIR,—May I, for the sake of continuing a useful debate, propose some possible answers to Dr. Crichton-Miller's nine Socratic questions (March 7, p. 337).

1. The British race has in its time produced the Authorized Version, Shakespeare, and the English lyric poets, the English folk-songs and Morris dances with their tunes, the English country house, the English garden, cricket, golf, and football (both kinds), the British Navy, and several other things. It has for some time been "not quite itself," but unless recovery is deemed impossible it ought not to be allowed to commit inadvertent suicide in a period of depression and confusion of mind or to die by opening a vein in a luxurious hot bath.

2. Quality is more desirable than quantity, but in a savage and predatory world quantity appears to be necessary to maintain independent existence.

3. It may be some time before we can agree upon and adopt eugenic safeguards, and if in the meantime we can prevent the diminishing birth rate from getting quite beyond our control we may perhaps be serving a good purpose. I do not pretend to know.

4. Babies cannot be divided into "wanted" and "unwanted." Many of those unwanted at the time of conception and during pregnancy and labour have become "wanted" before they are six months old. Neither married couples nor their medical advisers, whether in "birth-control" clinics or elsewhere, have enough knowledge, foreknowledge, and wisdom to decide precisely when and how often a given couple should try to have a child with any confidence that they are doing or advising what is best for all concerned—born and unborn. We can aim at a reasonable spacing and a reasonable limitation of families, but "every baby by design," if it is an ideal, which seems doubtful, is not a practical proposition, and "he that observeth the wind shall not sow." On the other hand, we can no more withhold contraceptive knowledge than we can "dis-invent" the petrol engine. Our only hope is to achieve restraint in the use of these deadly machines.

5. Society decides whether the illegitimate child shall be, on the average, an asset or a liability. If it were generally determined to make of every child born as good a citizen as possible, or if, by a not impossible revaluation of values, charity were preferred before chastity, mothers were honoured as mothers, and children welcomed as children, assets would undoubtedly predominate. If something is to be legalized, surely bearing a child would be a better object of legalization than destroying one in the womb.

6. The psychologists and school teachers are talking good sense about the only child.

7. It is very desirable to treat and, if possible, cure the functionally sterile male.

8. This question is too difficult for me.

9. Yes, it is very possible that we as a profession have sinned in these ways and in general by inculcating the doctrine of "safety first."—I am, etc.,

Hampstead. LINDSEY W. BATTEN.

Epididymitis following Acute Gonorrhoea

SIR,—The following case may be of interest. A man was admitted to hospital on Oct. 22, 1941, with acute gonorrhoea (gonococci present) of 3 days' duration, with a history of exposures on Oct. 10 and 17. He was treated with sulphapyridine 4 g. daily for 10 days, and then with irrigations and instillations of glycerin and acriflavine for 3 days. He appeared to react well to chemotherapy, and was discharged from hospital on Nov. 5, 1941, with no discharge, both urines clear, and a negative prostatic bead.

On Nov. 27, 1941, he was readmitted to hospital with right epididymitis and denied exposure to infection since leaving hospital; there was no urethral discharge and the first urine was clear with small threads. He was treated with gonococcal vaccine intravenously, suppositories, and prostatic massage. The epididymitis resolved rapidly and he was discharged from hospital on Dec. 11. Three preliminary tests of cure on Dec. 20 and 27, 1941, and on Jan. 10, 1942, were all negative, a prostatic smear on Dec. 20 showing no gonococci or plus cells. A final test of cure on March 10, 1942, after a provocative injection of 300 million gonococcal vaccine was completely negative, including urine examination, prostatic bead, passage of curved sound, and anterior urethroscopy; a Kahn reaction was negative. The original treatment, treatment of the epididymitis, preliminary tests of cure, and final test of cure were carried out by four different venereologists, all experienced medical officers.

This case would appear to raise questions of very considerable importance. Was the man really cured when he left hospital on Nov. 5? What was the cause of the epididymitis? I should be glad to hear the experience and opinions of other venereologists.—I am, etc.,

London, S.W.1. T. E. OSMOND.

Standard of Chest Radiography

SIR,—Dr. Rohan Williams's letter (March 28, p. 422) is very much to the point, and I trust will be noted by all who, like myself, are interested in the radiology of the chest. It has been my good fortune to be associated for many years with Dr. Kerley and the late Dr. E. W. Twining, both recognized authorities on this branch of radiology, and it has always been impressed upon me that the highest-quality radiograph is essential for the diagnosis of early chest lesions.

As honorary radiologist to a number of hospitals, both small and large, I would like to point out, however, that it is not always the fault of the radiologist if the technique is not up to the desired standard. The majority of patients and, unfortunately, medical practitioners, too, are under the impression that if an *x*-ray apparatus is available at all it is good enough to produce chest radiographs of the requisite diagnostic quality whatever its limitations in the matter of power output. (In parenthesis, all tuberculosis officers are not innocent in this respect. I know of one who used to profess to be able to exclude early pulmonary tuberculosis on films taken with a portable apparatus. It is difficult, if not impossible, to persuade such people that the average plant at the smaller hospital is not suitable for this work.)

In my opinion the output of an *x*-ray apparatus required to produce radiographs of perfect quality for chest work must be such that the absolute maximum exposure for any postero-anterior film should be one-tenth of a second or less at a distance of not less than five feet and preferably six, with a maximum peak kilovoltage of sixty-five. This necessitates an ample reserve of power in order to legislate for all types of patient. Only by the use of such factors is it possible to procure the finest lung detail by arresting not only any involuntary respiratory movement but, what is equally important, movement of the heart and great vessels. Allied to this there must be processing of an irreproachable character—a factor which, with all deference to the dark-room assistant, is not always faithfully observed.

Now such apparatus is very costly and is quite beyond the means of the smaller hospital, and would in any case be uneconomical from the point of view of the other work which it would be required to do. For these reasons I would recommend that all chest work in which there is a suspicion of early tuberculosis should be referred only to those institutions where adequate equipment is available, and, as Dr. Rohan Williams advocates, these should be supervised by consulting radiologists able to advise on all matters relating to the production and interpretation of chest radiographs. There is no question that, given suitable working conditions, the perfect radiograph is attainable in nearly all cases, and there can be no excuse for anything inferior. The latter is the result of poor workmanship, which is to be tolerated least of all in chest work.—I am, etc.,

Tunbridge Wells. WALTER ADDEY.

Complacency in Anaesthetics?

SIR,—Mr. Hamilton Bailey came in for some criticism when he disclosed the fact that there were times when alarming and dramatic incidents occurred in his theatres. Now another surgeon, Major John Nicholson (March 21, p. 385), tells us that in a series of 3,500 operations he has experienced 7 of these alarming "incidents." Dr. Geoffrey Kaye (*British Journal of Anaesthesia*, April, 1936) found that in one series of 13,400 operations there was a death rate "on the table" of 1.8 per 1,000, and in another series of 17,757 operations there was a death rate of 1.3 per 1,000, so I think that we have to ask ourselves whether perchance we are not getting too complacent.

There has been much agitation against the use of chloroform during the last twenty years, and is it not possible that "in straining at the gnat of chloroform we have swallowed the camel of spinal and intravenous anaesthesia"? Recent optimistic accounts of the results of spinal anaesthesia published in the *Journal* are perhaps reassuring, but in my own district such results leave much to be desired. As to intravenous anaesthesia, the position is very well summed up by Dr. Greene in the January-February number of *Current Researches in Anaesthesia and Analgesia*, who says: "The intravenous route for administering anaesthetic and analgesic drugs is a very valuable addition to the armamentarium of the completely equipped anaesthetist. It is still, however, a special method and should be reserved for use only when specially indicated."

The Royal College of Obstetricians and Gynaecologists carried out a very full investigation into the safety of certain anaesthetic agents when used in normal labour, and it would be of immense value if the Association of Anaesthetists were to carry out a similar investigation into the safety of various anaesthetic agents used in general surgery. The present collection of hospitals into "sectors" presents us with the opportunity.—I am, etc.,

New Barnet. JOHN ELAM.

Infective Hepatitis

SIR,—I have read with some interest Dr. J. Shafar's letter (Feb. 28, p. 307), in which a mild outbreak of infective hepatitis occurring among young patients in Mearnskirk Hospital was described. Between Dec., 1941, and Feb., 1942, I have seen ten patients suffering from this condition. Investigating the possible cause or causes, I noted several factors which each case seemed to have in common: (*a*) All the patients were between the ages of 6 years and 10 years. (*b*) Illness commenced in each case a short time after the eating of oranges, a distribution of which had recently taken place in Glasgow. (*c*) The illness was mild in all cases. The children affected were all over the age of 6 and, therefore, not being in the first batch of beneficiaries, may have been in receipt of oranges of secondary quality.

It would be of interest to know if the outbreak at Mearnskirk was associated with the distribution of oranges in Glasgow.—I am, etc.,

Glasgow. ISABEL DAVIDSON.

Removal of Plaster Casts

SIR,—The method described by Mr. R. G. Bickford (March 30, 1940, p. 539) for the painless and easy removal of plaster casts is very ingenious. Major C. W. R. Price (Nov. 29, 1941, p. 772) describes the difficulties he has encountered in the use of Bickford's method, and suggests a modification. He advocates the use of a vaselined tape during the application of the plaster cast, which pulls the piano wire into position when the time comes for removing the cast. However, even Major Price's modification will meet with objections, because some skill is required to pull the wire into position, and therefore cannot be done by everyone; also the piano wire of the correct gauge is not always obtainable outside Europe. I think it will interest your readers to hear of a simpler method.

Three or four years ago someone whose name I have forgotten advocated the use of a rubber gutter, which is intended to receive the lower blade of the plaster shears during the removal of the plaster cast. Unable to obtain the rubber gutter, I have been using instead an ordinary piece of rubber tubing which is a few inches longer than the intended length of the plaster cast. When the plaster has set I remove the tubing by simply pulling at one of its free ends. The pull causes the tube to elongate and also to become thinner; it thus slips out easily, leaving a tunnel of the size of the rubber tubing along the whole length of the cast. This tunnel admits the lower blade of the plaster shears easily, and the cast can be removed in less than a minute by the most unskilled person and without causing the slightest inconvenience to the patient.

When the plaster cast covers a joint which must be kept flexed, the kink in the rubber tubing will cause some difficulty in its removal. This difficulty can be overcome by the use of two pieces of rubber tubing, one for each "arm" of the joint; the two tubes are made to meet end to end at the bend of the joint. If necessary the rubber tubing may be vaselined to prevent it adhering to the plaster, but I have never found it necessary.

The advantage of the above method is that no special instrument is required. The plaster shears and the rubber tube form part of the regular equipment of all hospitals, and the same rubber tube can be used over again for another plaster as soon as the first one has set.—I am, etc.,

M. SHUN-SHIN, M.B., B.S.Lond.,
Port Louis, Mauritius. R.M.O., Civil Hospital.

Labour "Pains"

SIR,—The use of the word "pains" to denote the contractions of labour is such an ancient practice, authorized by the Bible and the service for the Churching of Women with its phrase "the great pain and peril of childbirth," that any criticism may seem presumptuous. The usage is, however, open to certain objections. In the first place it is not always accurate. At the end of pregnancy all pains are not "pains," and conversely not all "pains" are pains. A second and more important objection, particularly in primigravida, is that it prepares the patient for the pain of labour rather than the work. Perhaps it is a pity the old word "travail" has lost its meaning. The patient cannot use or understand the word "pains" in our technical sense, and it seems better to tell her that she will know that labour is starting when the contractions begin rather than when her pains commence. Recently I have done this with a number of women near term, and appear to have been understood quite well. A third objection to the usage is that it calls a phenomenon by its secondary instead of its primary quality.

Using the word "contractions" has two very real advantages. It doesn't prejudice the case in advance, not an unimportant point in a nervous primigravida dreading her labour. Secondly, it may indicate to those women who are relatively insensitive to pain what the early signs of labour really are and thereby reduce the number of supposedly precipitate labours.—I am, etc.,

Liverpool. PERCY MALPAS, F.R.C.S.

Treatment of Fractured Ribs

SIR,—Every doctor in the course of years must see many cases of injured ribs treated by strapping, and must have formed a varying opinion of its efficacy or otherwise in the relief of pain. One of the disadvantages of this form of treatment, to which attention is drawn by Dr. D. J. Neal Smith, is well exemplified in the following case.

A 'bus driver, 50 years of age, on a frosty morning some weeks ago was cranking up his 'bus when his feet slipped away from under him and one side of his chest came into violent contact with one of the headlamps. Two of the lower ribs on one side were found to be broken, and he was very effectively strapped up on that side at a local hospital. On calling to see me the following day he complained of some pain and was given a few tablets of aspirin and Dover's powder, with instructions to take one every six hours if the pain was still troublesome.

A few mornings later I was informed that he had had a very bad night and was breathing with great difficulty. I found him sitting up in bed; his face was flushed and anxious-looking, his respirations about double the normal, and his whole appearance was that of a case of acute pneumonia. The base of the lung on the strapped side was full of moist sounds, and he complained of a feeling of intolerable constriction round the chest. The three lowest pieces of strapping were immediately pulled away as far as the mid-axillary line, and he at once gave vent to a sigh of intense relief. His whole condition appeared to change in a few minutes.

By the following morning he was almost normal in every way in so far as concerned his previously urgent symptoms, and he eventually made a complete recovery without any further respiratory signs or symptoms. I may add that in the course of nearly 17 years' practice this is the first case of this kind that I have seen.—I am, etc.,

Hove. G. LLEWELLYN DAVIES.

Action of Gentian Violet

SIR,—Prof. Garrod's article on the selective bacteriostatic action of gentian violet (Feb. 28, p. 290) provides an explanation of an observation recently made by me, that cases of impetigo treated with sulphapyridine ointment to which is added 1 in 20,000 gentian violet, in conjunction with sulphapyridine administered orally, recover more quickly than do cases similarly treated but without the addition of gentian violet to the ointment. The gentian violet was added in the first place with the idea of preventing the growth of moulds in the lard used for making the ointment, and nothing more. Can it be that the gentian violet deals with secondary, and the sulphapyridine with the primary, infection in the impetiginous lesions?—I am, etc.,

T. S. DAVIES, M.R.C.S.,
Squadron Leader, R.A.F.V.R.

The Teaching of Anatomy

SIR,—One wonders how many of your correspondents (other than the teachers of anatomy) who have entered into the controversy upon the teaching of anatomy could be regarded as expert witnesses. How many of them have ever been inside a department of anatomy, much less listened to a lecture on the subject, since their student days? The purport of this letter is to try to convince the sceptics that the anatomists themselves have already gone a long way towards setting their house in order, that radical changes have been made in the teaching of the subject during the past twenty years, and that the days of "O pray, little bones" and "Superiors, inferiors must not annoy" are as dead as the dodo.

I hope I shall not be considered egotistical if I describe the methods appertaining to this department, since I am not competent to speak for others, but I do know that our methods are in no way unique.

The student is made to realize, immediately he enters this department, that anatomy is an investigation, a piece of research work, which he must carry out for himself upon the human body, and that his books are there merely for reference. Students are divided into groups, and each group is placed under the care of a tutor, who is always present with his students in the dissecting room and available to give help and guidance at any time. All students in the same year dissect the same region at the same time, and each dissecting-room period is preceded by a lecture designed to correlate the parts dissected. The body is dissected as a whole, not in a series of parts; thus, for example, the student has the opportunity of studying the course of the thoraco-abdominal nerves from their origin to their termination at one and the same time.

Applied anatomy is stressed throughout, and we have in the department a collection of over 500 lantern slides illustrating some of the commoner clinical conditions met with in general practice. Thus to take one example: When dealing with the anatomy of the breast, a series of twenty slides are shown illustrating carcinoma of that organ from its earliest to its latest phases. Such manifestations as "peau d'orange," "retracted nipple," and "skin involvement" are illustrated and explained anatomically.

If further evidence were needed it could be found in the types of question set in our examination papers. Here is a copy of our most recent terminal examination paper (March 23, 1942):

1. Describe the cavernous sinus and explain on an anatomical basis the sequelae of cavernous sinus thrombosis.

2. Describe the exact position of the various structures met with in a dissection of the abdominal wall in a female subject below a horizontal line drawn from the anterior superior spine to the linea alba.

3. Explain embryologically the following clinical conditions: (i) Hare-lip. (ii) An unerupted wisdom tooth of upper jaw. (iii) Lingual thyroid.

The students had seen slides illustrating the typical sequelae of cavernous sinus thrombosis and the various types of hare-lip and had the opportunity of handling specimens of hare-lip, lingual thyroid, and unerupted wisdom teeth. These subjects had also been fully dealt with in the lectures.

Our senior students spend three hours a week receiving clinical instruction in the wards of our associated hospitals, and since the war started have seen many emergency operations while performing fire-guard duties at these institutions. One of the most successful innovations of recent years has been the introduction of the radiologist, and when dissecting the viscera students have the opportunity of seeing each other's organs on the radiographic screen. Other innovations include the use of the cinematograph film and a more frequent use of the living model. Thus a candidate at his professional examination in anatomy is expected to know how to palpate and percuss, the correct stance to adopt in examining a patient under various conditions, how to put the pectoral muscles on the stretch when examining the breast, and so on.

As a former general practitioner of ten years' standing, I can remember many occasions when I was at a loss because my anatomy was deficient, but I never remember feeling in any way embarrassed because a course of lectures on morphogenetic mechanisms or on the influence of mechanical, hormonal, and other factors in the induction of structural modification had been inadvertently omitted from the curriculum. Perhaps, however, I was never that kind of doctor!—I am, etc.,

Department of Anatomy, Birmingham University. C. F. V. SMOUT.

SIR,—As a demonstrator of anatomy lately come from a junior surgical post, I have been greatly interested in the correspondence on the teaching of anatomy, and should like to add the following suggestions. It seems to me that in a discussion on the teaching of anatomy to the medical student the central fact to be borne in mind is that his ultimate study is not anatomy but medicine. He cannot, therefore, regard anatomy as a study for its own sake, but rather as a tool which will enable him to tackle with real understanding the problems presented in clinical investigations.

His anatomical work ought, therefore, from the beginning to be fully integrated with the study of the patient. This could best be achieved if, during the period of his anatomical studies, the medical student were to spend a few hours each week in the wards, under the tuition of an anatomical registrar, whose business it would be to select patients presenting lesions of the part then being dissected by the student, and to demonstrate pertinent anatomical features underlying diagnosis and treatment. This would necessitate visits by small anatomy classes to every department of the hospital. The student would thus acquire a sense of proportion in regard to his dissections, and he would have some understanding of the relative importance of the structures encountered. He would see anatomy "with the skin on" and develop an appreciation of the value of surface anatomy. His dissection of the hand and foot and of the joints of the limbs would be done with an eye to the importance of these structures, and not skimped, as often happens at present, because they come at the end of the term's work in the usual dissecting manuals.

In addition to this suggestion for recasting our attitude towards the teaching of anatomy, I would like to draw attention to the possibility of improving our methods of teaching it. The standard anatomical textbooks have an almost encyclopaedic quality about them which makes them excellent as reference books but heartbreaking to learn from. To be successful a textbook of anatomy for medical students should indicate the relative importance of the facts recorded and their significance—that is, it should pass on the sifted experience of the author or authors—or, in other words, it should attempt to *teach* anatomy, and not simply to record anatomical facts. An increase in this teaching spirit in textbooks, dissection manuals, and museums would, I believe, rapidly lighten the anatomical burden of the medical student. The period of dissection would become a very valuable part of his study, for under these circumstances he would do a great deal of his work on the cadaver in the critical spirit of an investigator.—I am, etc.,

Fetcham, Surrey. N. B. EASTWOOD.

Scabies

SIR,—I find Dr. Staveley Dick's remarks about scabies (March 7, p. 340) more cryptic than the amusing definition with which his letter opens. Who, one wonders, is the mysterious insectophil dictator to whose decrees such exception is taken? To compare the diagnosis of scabies, caused by a metazoan easily visible to the naked eye, with that of tuberculosis or syphilis is manifestly absurd. A single negative report on either scabies or pediculosis may well be conclusive, though it will almost certainly carry some obvious reservations about subsequent hatchings or reinfection.

As to the statement that a great deal is known about scabies, it would seem from the progress reports from Sheffield that there is also a great deal that we recently did not and much that we still do not know. The need for constant control takes up time, and it is regrettable that in certain quarters the demand for immediate conclusions is tending to detract from the value of the work as a whole. Old prejudices die hard, and what our fathers thought about scabies is mainly of sentimental value. There is really no reason why scabies should not be diagnosed and treated by the general practitioner in co-operation with the local health authority, whose facilities for cleansing and disinfection must be adequate. Indeed, until the profession acquires competency in diagnosis there is little chance of extirpating the disease. Dr. Mellanby has recently given instruction at Sheffield to Army medical personnel, officers, and N.C.O.s, and I can testify to the unerring precision with which one of the last mentioned, by a few deft movements of a needle, conjured forth from their comfortable lairs, fat and feebly protesting, mite after mite.

The letter ends on a note of pessimism. Our efforts will inevitably be brought to naught by "mental defectives" (presumably patients) and "carriers with natural or acquired immunity." No doubt the question of immunity to scabies is receiving due attention; and "carriers," are they not just so many cases of scabies? There is as yet no reason to fear that the mite itself can acquire resistance to anti-scabies drugs! Let us look forward to the day when every M.O.H. will have at his disposal those who can diagnose scabies. It will then be possible for the practitioner, without undue trouble or expense, to acquire a working knowledge of this disease, which is unfortunately widespread among the civil population. The striking success of the brief courses in diagnosis already referred to shows that the recognition of this disease in its ordinary form is well within the scope and powers of the general practitioner. A watchmaker's or other simple lens is all the apparatus necessary, and an ordinary dissecting needle if more ambitious action is contemplated.—I am, etc.,

Sussex. H. LYNDHURST DUKE.

Evolution of the Human Foot

SIR,—With reference to Mr. Norman Lake's extremely interesting article on evolution as an aetiological factor in foot disease (Jan. 10, p. 31) might I suggest that he may have got hold of the wrong end of the stick, and that his picture of the evolution of the foot should be reversed. From an embryological point of view, the human foot (and hand, and head too, for that matter) appears to be primitive and the ape's foot highly evolved. This is perhaps most clearly seen in the horse, in whose hoof all obvious sign of Eohippus's five digits has disappeared. Similarly, if the human head be compared with the head of the chimpanzee, for instance, it becomes evident at once that it is the human head that is primitive. The baby chimpanzee has a head which is almost human, but as it grows older it evolves into the highly specialized head of an ape. All animals are highly specialized and evolved to suit particular conditions: it is we human beings who are primitive. The younger the animal embryo, the more human it is.—I am, etc.,

Newcastle-upon-Tyne. RICHARD HOPE.

T. Francis, jun., and I. J. Brightman (*Proc. Soc. exp. Biol.*, N.Y., 1941, **48**, 116) found that in nine out of ten persons naturally infected with influenza virus A there was later a sharp increase in the capacity of their nasal secretions to inactivate the virus. The results support their earlier conclusion that virus-inactivating substance in nasal secretions has the characteristics of antibody.

Medico-Legal

DISCIPLINARY PROCEDURE OF THE G.M.C.

APPLICATION TO QUASH PENAL FINDING

In a Divisional Court of the King's Bench, before the Lord Chief Justice (Lord Caldecote), Mr. Justice Humphreys, and Mr. Justice Singleton, on March 27, an application was made by Dr. Eric Dickens Spackman for an order of certiorari and mandamus against the General Medical Council for the purpose of quashing a direction by the Council on Nov. 29, 1941, to erase Dr. Spackman's name from the *Medical Register*. After a full day's hearing the application was refused with costs, Mr. Justice Singleton dissenting.

Mr. Cecil Havers, K.C., and Mr. H. C. Dickens, instructed by Messrs. Hempsons, appeared as counsel for the applicant, and Mr. Gilbert Beyfus, K.C., and Mr. D. C. Bartley, instructed by Messrs. Waterhouse and Co., for the General Medical Council.

The Case for the Applicant

Mr. Havers said that the grounds on which this relief was sought were that the Council had judged Dr. Spackman to have been guilty of infamous conduct in a professional respect without holding due inquiry as laid down under Sect. 29 of the Medical Act, 1858, which reads:

"If any registered medical practitioner shall be convicted in England or Ireland of any felony or misdemeanour, or in Scotland of any crime or offence, or shall after due inquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect, the General Council may, if they see fit, direct the Registrar to erase the name of such medical practitioner from the *Register*."

Dr. Spackman had been summoned before the Council on the ground of having committed adultery with a married woman (of which adultery he had been found guilty by a decree of the Divorce Court in a case in which he was cited as co-respondent) with whom he had stood in professional relationship. At the hearing before the Council Messrs. Hempsons (who had not acted for him in the divorce proceedings) discovered that there was a considerable body of evidence which should have been called in court and could not fail to have affected the mind of the tribunal and might well have resulted in establishing Dr. Spackman as innocent of adultery. The Council, however, had an established practice in such cases to accept the decree absolute as conclusive evidence of adultery and not to allow the doctor to be heard or to call evidence upon that issue at all unless he could satisfy them that there were special circumstances entitling him to do so. On this occasion the applicant was not allowed to call the additional evidence or to be heard on the issue of adultery. The point for determination of the Court was whether in refusing to allow him to call further evidence the Council did hold "due inquiry" in accordance with the terms of the section. Professional relationship was admitted.

He drew attention to the distinction in Sect. 29 between the case of a conviction for felony or misdemeanour and a charge of infamous conduct in a professional respect. In the former case all that had to be proved was the fact of the conviction. In the latter case there must be "due inquiry" before a direction to erase the name of a medical practitioner from the *Register* could be given.

The Council's Reply

Mr. Beyfus, on behalf of the Council, said that although they were respondents to the motion they did not regard themselves as ordinary litigants, and were glad of the opportunity of obtaining the assistance of the Court in the fulfilment of the onerous duties laid upon them by the Legislature. In considering cases of professional misconduct where adultery was an element there were four matters which the Council had to have in mind: (1) whether adultery was established in fact; (2) whether at the time of adultery the woman was a patient; (3) whether there were any mitigating circumstances; and (4) what action they should take in the matter provided that they were satisfied affirmatively as to the first two. It had been the practice of the Council, unless there were exceptional circumstances, to accept the decision of the Divorce Court as sufficient evidence of adultery. When this tribunal of 39 members had to consider these four factors were they not entitled to accept the judgment of a High Court judge trained in the weighing of evidence who had seen the witnesses in person and observed their demeanour? The only decision which could flow logically from the arguments on the opposite side was that when a practitioner summoned before the Council challenged the decision of the Divorce Court it was essential that the whole of the case should be reheard

and retried by this tribunal of 39 members. Additional witnesses were obviously quite useless unless the rest of the evidence which had been before the Divorce Court was again put before the professional tribunal. In many cases a successful petitioner in the Divorce Court might be unwilling to support a case before the Council—for example, if he had obtained heavy damages and his only chance of getting them was that the doctor should remain in practice, or if he still loved his former wife and did not desire to injure her by taking away the livelihood of the doctor whom she had since married. The question was how far a very large body like the Council, having to conduct an inquiry which might involve a number of factors, was not entitled to say: "This having been the subject of judicial determination, we will accept the decision of the Court before which the practitioner was represented by solicitors and counsel, it being admitted that there was nothing wrong with the trial at all except what was now alleged to be the undue absence of witnesses, due to the negligence of the practitioner's own legal advisers."

Mr. Justice Singleton pointed out that in framing the Medical Act Parliament might have said, "You may accept a finding of adultery and treat it in just the same way as a conviction," but in fact it made a distinction and said that there should be "due inquiry."

Mr. Beyfus replied that it was a little hard to contemplate that while the Legislature intended the Council to act upon a verdict of juries in criminal cases, they should not accept as evidence the judgment of a High Court judge with regard to a matter of "infamous conduct." It might just as well be complained that counsel at the trial did not put forward two or three points which would have been conclusive in favour of the party concerned. Argument was just as important as evidence. A speech might turn a case just as much as a witness, and often did, and if a practitioner was complaining before his professional tribunal of a judgment of the Court below he might just as well complain, if this were admitted, of the defective oratory of his counsel as of the defective judgment of his solicitors.

"In my submission we can make 'due inquiry' by inquiring not only into the facts themselves but into the ascertainment of facts from the adjudication of the High Court judge; and we are entitled to treat any such adjudication as good and valid, provided that nothing is put forward which would show that it was contrary to the principles of natural justice to accept any such adjudication. . . . It is not suggested that we [the Council] have acted dishonestly or in bad faith. We have thought that the Divorce Court judge was a better judge of evidence than we were likely to be, and we have thought it right to accept his judgment despite the absence of witnesses who were available but whom none of the legal advisers of Dr. Spackman thought it right then to call."

The Applicant's Rejoinder

Mr. Havers said that part of the argument for the Council was really based upon convenience: that it would be an intolerable burden on this large body of 39 members to try out a case of this sort. Nevertheless, Parliament had placed that duty on this body and other similar bodies, such as the Law Society, which had to deal with cases that might take a considerable number of days. The statute imposed on the Council the duty of making "due inquiry," and in this case they did not even attempt to ascertain the nature of the evidence which Mr. Hempson was entering on behalf of Dr. Spackman.

Judgment

Their Lordships delivered judgment on March 31.

The Lord Chief Justice said that the General Medical Council was a domestic tribunal. To it was entrusted the duty of safeguarding the good name of the medical profession. He could not believe that Parliament intended the Council in all cases to act as if it were a court of law trying a criminal charge. Parliament had put no such duty upon the Council in what perhaps were the more serious cases that came before it—namely, convictions for felony and misdemeanour. The Council was not equipped for any such task. It was unable either to compel the attendance of witnesses or to administer the oath. So far as he could see it was not bound by the rules of evidence. It seemed reasonable to suppose that Parliament meant to leave the Council to devise its own means of ascertaining the facts on which its decisions must depend.

"It is said that 'due inquiry' means at least that witnesses that are tendered must be heard by the Council. . . . The objection to such a course is obvious: if evidence on one side is heard, the evidence on the other side must be heard. But it may not be available as it was at the trial. What is to happen then? . . .

"I see nothing that can be said to be contrary to justice, whether it is called natural justice or merely justice, if this body, largely composed of medical men, charged to make due inquiry, honestly decides to rely on the findings of one of H.M. judges, especially when, as in this case, all the evidence was available at the trial. It does not offend anyone's sense of justice that Parliament has made the verdict of a jury on a charge of felony conclusive. Equally I find nothing to shock my sense of justice if I find that the Council, being satisfied that a full investigation has already been made by a competent Court of a particular question of fact, chooses to accept the decision of that Court without a fresh hearing. . . . I think that this application should be refused."

Mr. Justice Humphreys agreed. That the Council held an honest and impartial inquiry was not disputed. The question of adultery had been determined in the Divorce Court after a hearing extending over at least seven days.

"The General Medical Council is not a court of law but a domestic forum left to manage its own affairs as it considers best in the interests of the profession. It is not bound by rules of evidence, it has no power to administer an oath or to compel the attendance of witnesses; it may receive and act upon hearsay evidence. In short, the Council is free to adopt its own procedure and to decide upon its own methods of proof so long as it obeys the dictates of natural justice. . . . This Court has no duty and no right to dictate to the Council what witnesses it must hear unless the refusal to hear them constitutes a violation of the principles of natural justice."

The course which the Council was asked to adopt would, he believed, have been refused by any court of justice in the kingdom, appellate or otherwise.

Dissenting Judgment

Mr. Justice Singleton said that it was obviously undesirable that there should be a second hearing on the issue of adultery after the question had been fully investigated by a judge of the Divorce Division, and there might be good reason for an amendment in that respect of Sect. 29 of the Act, but as the section stood there must be due inquiry as to whether infamous conduct in any professional respect was proved, and in the circumstances of the present case the first stage was proof of adultery. The Council was under a duty to make due inquiry, and if the facts were in dispute, according to the ordinary principles of the administration of justice, they must hear the one against whom an accusation was made and any witnesses whom he desired to call. The Legislature had made proof of a conviction conclusive; it had not done so in the case of a decree or order of a judge sitting in Divorce.

"The Council does not hold 'due inquiry' (when there is a dispute as to the facts) merely by ascertaining that someone else has made due inquiry and has come to a decision in a cause or suit between different parties. The whole professional future is at stake and the Council is charged with the duty of making due inquiry; it cannot delegate the duty. . . .

"It is possible (though not likely) that a man for what might seem to him good reason would allow a suit in which he was cited as co-respondent to go through without strenuous opposition, and yet desire to contest the facts if he was attacked later in a professional capacity. In my view he is entitled to do so under the terms of the statute. . . .

"Members of the medical profession desire to be, and they ought to be, masters in their own household, but they are governed by the terms of the Act which gives them their powers. . . .

"The evidence of witnesses not called in the Divorce Court might have weighed with the Council on the question as to whether they should order the practitioner's name to be erased even if they had been satisfied of adultery. We do not know what the witnesses would have said. The Council refused to hear them because of their practice to which I have already referred."

He did not consider that the Council had made "due inquiry" within the meaning of the Act, and he believed the applicant to be entitled to the relief for which he asked.

Application Refused

In the result, on the opinion of two of the members of the Court, the other dissenting, the application was refused, with costs.

Reporting on the effects of bombing on children, Dr. N. Gebbie, medical officer of health for Hull, states that children have not suffered to anything like the extent expected. After a heavy raid they recovered much more quickly than adults. In spite of a continuance of shelter life, the general health of Hull in 1941 was good. In the third winter of the war there had been no appreciable increase in catarrhal conditions, and the city was at present free from epidemics. Many of the "trimmings had gone from the dietary," but there had been no increase in undernutrition among the school population.

Obituary

SIDNEY FORSDIKE, M.D., F.R.C.S.

We regret to announce the death on March 29 at Bickenhall Mansions, Marylebone, of Mr. Sidney Forsdike, the well-known London gynaecologist, who retired from active work a few years ago.

Herbert Sidney Forsdike studied medicine at University College Hospital and took the Conjoint qualification in 1901; he graduated M.B. of London University in 1903 and M.D. in 1913, and became F.R.C.S.Ed. in 1917 and F.R.C.S.Eng. in 1920. His work at the Hospital for Women, Soho Square, began in 1917, when he was appointed surgical registrar and pathologist. He became a member of the honorary medical staff in 1919, and on retiring at the end of 1935 was elected consulting gynaecological surgeon. He was chairman of the medical committee of the hospital from April, 1934, until his retirement. He did some early work with radium, of which he owned a certain amount, and, characteristically, he used this for the treatment of patients at Soho Square before the hospital had its own supply. He was awarded the Jacksonian Prize of the Royal College of Surgeons in 1922 for his essay on the effects produced by radium upon living tissues, with special reference to its use in the treatment of malignant disease, and two years later was appointed Hunterian Professor, and lectured on the same subject. In 1929-31 he examined in midwifery for the English Conjoint Board. In addition to his posts at Soho Square he had been gynaecological surgeon to the Kensington General Hospital and the Princess Beatrice Hospital, Earl's Court, and consulting obstetrician to the Borough of Hammersmith. During the last war he held a temporary commission in the R.A.M.C. and served as surgical specialist at the Paddington Military Hospital and officer-in-charge of the surgical division of the Mile End Military Hospital. He published a book on *Sterility in Women* in 1928, and a short *Textbook of Gynaecology* in 1932; a number of papers by him on the radium treatment of uterine haemorrhage appeared in this *Journal* and elsewhere.

Sidney Forsdike's wide experience and clinical wisdom inspired confidence among patients and colleagues alike. His steel-blue eyes and somewhat rugged features gave him at first sight a superficial appearance almost of pugnacity which was quite at variance with his exceedingly kindly disposition. Shrewd in judgment and unassuming in manner, he was well liked at his club; he was an always welcome frequenter of the bridge room, in which the nickname of "Dr. Thorndike" was evidence of his popularity in the milieu of "sodalitas et convivium." For the devoted daughter who shared his home his many friends will feel profound sympathy.

Medical Notes in Parliament

Medical Examination of Young Workers.—Mr. CHUTER EDE told Dr. Haden Guest on March 26 that the School Medical Service was working under strain, and the President of the Board of Education could not contemplate the extension of school medical inspection to young persons between the ages of 14 and 18 years at the beginning of their employment and at convenient dates thereafter. Provision for the care of young workers was made through examining factory surgeons or other doctors, through welfare officers, and in other ways.

Artificial Limbs.—In an answer on March 26 to Sir Francis Fremantle, Mr. HERBERT MORRISON said arrangements for the provision of artificial limbs required to be put on a more satisfactory footing. The arrangements must be dealt with as part of the comprehensive measures for the rehabilitation of disabled persons which the Government had decided should be prepared for introduction soon after the end of the war. These measures were being investigated. Meantime it was hoped, as part of the wartime emergency scheme for rehabilitation, shortly to have in operation such facilities for provision of artificial limbs as would enable injured workmen to resume employment.

Notes in Brief

An Army Command instruction, the terms of which have been agreed with the Central Medical War Committee, will be published shortly which should remove any misunderstandings about refusals of Local Medical War Committees to hear representatives of the Home Guard when discussing Home Guard affairs. Very few complaints have been received on this.

The Services

Surg. Rear-Admiral W. H. Edgar, O.B.E., R.N., has been appointed an Honorary Physician to the King.

AWARDS AND MENTIONS IN DISPATCHES

Temp. Surg. Lieut. David Clements Jackson, R.N.V.R., has been awarded the D.S.C., and Temp. Surg. Lieut. Allan Gordon Cumming, R.N.V.R., has been mentioned in dispatches, for daring and resolution while serving in daylight attacks at close range and against odds upon the German battle cruisers *Scharnhorst* and *Gneisenau* and the cruiser *Prinz Eugen*. Temp. Surg. Lieut. J. P. G. Rogerson, R.N.V.R., and Capt. S. D. Corry, R.A.M.C., have been mentioned in dispatches for distinguished services in successful combined operations against the enemy at Vaagso and Maaloy. Temp. Surg. Lieut. A. M. Evans, R.N.V.R., has also been mentioned in dispatches.

The King has conferred the Efficiency Decoration of the Territorial Army upon Major (Temp. Lieut.-Col.) E. G. Oastler and Major A. C. Crawford, R.A.M.C.(T.A.).

CASUALTIES IN THE MEDICAL SERVICES

Previously reported Wounded, now reported Prisoner of War.—War Substantive Capt. A. R. Duff, R.A.M.C.

Missing.—Lieut.-Col. C. O. Shackleton, R.A.M.C.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on March 13 the degrees of M.B., B.Chir. were conferred by proxy on P. H. Nash. During March the titles of the degrees of M.B., B.Chir. were conferred by diploma on Mrs. M. Hughesdon of Newnham and D. H. King of Girton.

UNIVERSITY OF LONDON

In and after 1942 all candidates for the M.B., B.S. degrees will be examined under the new regulations, but candidates who completed their courses of study in or before 1939 will be permitted to submit schedules of attendance under the old regulations.

UNIVERSITY OF ABERDEEN

Prof. William C. Wilson, F.R.C.S.Ed., has been released from his duties as regius professor of surgery on his appointment, under the War Office, to a post in the medical service of the Middle East.

UNIVERSITY OF EDINBURGH

The following candidates have been approved at the examinations indicated:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—*Part I*: R. C. Dickson, A. C. B. Singleton, C. H. H. B. Sparrow. *Part II*: F. O. Adewole, W. A. M. Akiyemi, L. G. Bruce, J. Crabb, W. E. Lawes, C. H. H. B. Sparrow.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council held on April 9, with Sir Alfred Webb-Johnson, President, in the chair, the Jacksonian Prize for 1941 was awarded to Mr. W. Bremner Highet, F.R.C.S. (Wingfield-Morris Orthopaedic Hospital), for his essay on "Injuries to Peripheral Nerves, with Especial Reference to the Late After-results." The following was approved as the subject for the Jacksonian Prize for 1943: "The Treatment of Acute Intestinal Obstruction."

The John Tomes Prize for the years 1939-41 was awarded to Mr. R. V. Bradlaw, L.D.S., M.R.C.S., for his researches into the microscopical structure of the dental tissue. Mr. R. G. Britt (Birmingham) was appointed Begley Student for the ensuing three years on the result of the examination in anatomy for the M.R.C.S.

Dr. N. G. Horner, Editor of the *British Medical Journal*, and Group Capt. P. C. Livingston, Consultant in Ophthalmology to the R.A.F., were elected Fellows under the Charter, which permits the Council to elect annually to the Fellowship, without examination, two Members of the College of 20 years' standing.

Mr. H. S. Souttar was re-elected a member of the Court of Examiners for one year from May 14. Mr. Eardley Holland was reappointed representative of the College on the Central Midwives Board.

A diploma of Fellowship was granted to P. F. J. Hickinbotham, and Diplomas in Child Health were granted, jointly with the Royal College of Physicians of London, to the following candidates:

Irene M. Bower, J. L. Emery, Monica M. M. M. Fisher, Margaret J. Graveson, Eleanor J. Herrin, Mary C. Hopper, A. M. Lester, Pearl Ivors Zina E. Moncrieff, Anna E. Rides, L. M. Shorvon, Eleanor M. Singer, T. H. E. Taylor-Jones, Celia K. Westropp, H. Wolfsohn.

INFECTIOUS DISEASES AND VITAL STATISTICS

No. 12

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	(b)	(c)	(d)	(e)	1941 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	198	13	55	2	7	330	26	80	2	19
Deaths		1	3				3	4		
Diphtheria	894	32	199	46	33	1,064	60	278	24	28
Deaths	23	—	3	3	—	44	4	6	—	—
Dysentery	125	11	40		—	128	25	36		—
Deaths		—	—	—	—			—	—	—
Encephalitis lethargica, acute	6	—	1		—	2	—	1		—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						24	1	82	2	2
Deaths						—	—	—	—	—
Erysipelas			50	7	3			48	6	—
Deaths		—	—				1	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	34	5	10	7	2	38	2	11	4	7
Measles	3,188	224	280	109	40	14,888	249	168		19
Deaths	4	1	—	—		21	—	1	1	—
Ophthalmia neonatorum	105	3	25	1	—	83	2	24		—
Deaths										
Paratyphoid fever	5	—	1	—						
Deaths	1	—	—	—	—					
Pneumonia, influenzal*	1,258	76	14	4	33	1,177	37	29	6	6
Deaths (from influenza)	42	5	7		2	116	9	8	7	8
Pneumonia, primary			270	25				544	14	
Deaths		55			10		—		18	14
Polio-encephalitis, acute	3	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	5	—	—	1	2	8	—	2	1	—
Deaths		—	—				—	—		
Puerperal fever	—	1	32	—	1	—	—	19	3	—
Deaths		—					—			
Puerperal pyrexia	181	8	21		—	24	1	27		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,307	45	194	42	24	1,205	55	162	28	27
Deaths	—	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	9	—	1	5	2					
Deaths	2	—	1	—	—					
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,504	173	46	61	13	4,319	64	847		19
Deaths	10	2	—	2	1	36	2	22	2	
Deaths (0–1 year)	371	49	75	44	17	478	30	165	24	28
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,948	700	714	246	127	6,733	944	843	235	242
Annual death rate (per 1,000 persons living)			16·1	16·4	†			18·4	15·6	21·2
Live births	6,373	691	936	578	256	5,322	396	991	321	249
Annual rate per 1,000 persons living			19·4	38·6	†			20·0	21·3	21·8
Stillbirths	251	31	37			228	16	45		
Rate per 1,000 total births (including stillborn)			38					43		

*Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the incidence of acute pneumonia, having risen by 571 during the past four weeks, fell by 309. The decline was greatest in Lancashire and Yorks West Riding, where the recent rises had been the highest. There was another increase in the notifications of measles, 208 cases. The high total this week was the result of the experience of Lancashire, where 590 cases, compared with 404 in the preceding week, were recorded (Oldham C.B. 151, Manchester C.B. 123).

In *Scotland* a general fall in the number of notifications of infectious diseases was recorded. Cerebrospinal fever, with 55 cases (10 more than in the preceding week), was an exception to the downward trend. The increased incidence was confined to the western area, the principal centre of infection being Glasgow, 24. The number of notifications of measles in Edinburgh, 123, and in Glasgow, 114, were 15 and 14 fewer than in the previous week. In Rutherglen 26 cases were notified.

Eire recorded a rise in the incidence of measles, due to the experience of Dublin, where 66 cases, compared with 39 in the preceding week, were notified.

Cerebrospinal Fever

198 cases of cerebrospinal fever, a decrease of 30% compared with the total of the preceding week, were notified in England and Wales. The trend of the incidence has been irregular during this year, and the following is a comparison of the two preceding years and the average of the immediate pre-war years:

Week:	1	2	3	4	5	6	7	8	9	10	11	12
Average of 1936–9	31	37	30	29	34	29	38	29	40	34	31	33
1940	53	107	144	184	299	406	557	585	617	603	541	476
1941	232	266	287	307	332	345	376	430	406	365	332	334
1942	149	178	132	152	183	166	186	165	216	227	281	198

In 1940 and 1941 an increase was recorded in the number of notifications for each week from the beginning of the year until the maximum was reached in the eighth to ninth week. This continuous increase to a maximum has not been shown by the returns for this year, which have fluctuated between increased and decreased incidence with a later maximum at the eleventh week.

Quarterly Return of the Registrar-General for England and Wales

During the December quarter of 1941 the death rate was 11.0 per 1,000, compared with 13.9 in the fourth quarter of 1940 and with an average of 11.9 for the fourth quarters of 1935-9. The birth rate was 13.9 per 1,000, compared with 13.1 in the last quarter of 1940 and with an average of 13.8 for the fourth quarters of the five years preceding 1940. The number of illegitimate births was 7,406, which was 2,209 more than in the corresponding quarter of the preceding year—an increase of nearly 50%. Infant mortality was 56 per 1,000 live births—3 below the average of the ten preceding fourth quarters. The 194,516 persons married in the quarter were 29,658 fewer than in the fourth quarter of 1940, and 39,569 fewer than in 1939, but were 8,327 above the average of the corresponding quarters of 1935-8.

Included in the report are provisional figures for the whole year. The death rate during 1941 was 12.9 per 1,000, and was 1.1 below that of 1940 and 0.5 below that of 1929, but above the rates of the intervening years. The birth rate was 14.2 per 1,000 and was the lowest recorded, being 0.2 below the previous lowest reached in 1933. Infant mortality was 58 per 1,000 live births, and was 3 above the 1940 rate and 8 above that of 1939. Stillbirths were 35 per 1,000 total births, the lowest proportion recorded. The illegitimacy rate among live births was 10 per 1,000 above the average for the preceding five years.

Returns for the Week Ending April 4

The number of cases of infectious diseases notified during the week included scarlet fever 1,119, whooping-cough 1,412, diphtheria 792, measles 3,274, pneumonia 1,136, cerebrospinal fever 181, dysentery 152, paratyphoid 4, typhoid 10.

A special number (June, 1941, 7, No. 6) of the Portuguese journal *Clinica: Higiene e Hidrologia* is devoted to British medicine and contains the following articles: Medical Education in England, by D. Furtado; Neurosurgery in Great Britain, by A. Lima; Instruction on Tropical Medicine in England, by A. Salazar Leite; Pulmonary Surgery in England, by J. Nunes d'Almeida; Sleep and Some of its Disorders, by J. Purves-Stewart.

Medical News

The Central Midwives Board for England and Wales has unanimously re-elected Sir Comyns Berkeley, M.D., F.R.C.P., F.R.C.S., F.R.C.O.G., as its chairman for the year ending March 31, 1943.

Prof. M. Greenwood, F.R.S., F.R.C.P., head of the Department of Epidemiology and Vital Statistics, London School of Hygiene, has been elected an Honorary Fellow of the National Institute of Sciences of India.

The Harveian Lecture will be delivered before the Harveian Society of London by Col. L. E. H. Whitby at the Medical Society of London, 11, Chandos Street, W., on Monday, May 4, at 4 p.m. His subject is "The Hazards of Transfusion."

Dr. G. C. Anderson will deliver a lecture on "Planning for the Future of Medicine" at Weston Hotel, Bath, on Thursday, April 23, at 5.30 p.m. All Service medical officers and civilian practitioners will be welcome.

The Association of Austrian Doctors in Great Britain will hold a meeting on Sunday, April 19, at 11 a.m., at 69, Eaton Avenue, N.W.3 (near Swiss Cottage Station), when Mr. Rodney Maingot will lecture on "Peptic Ulcer and Gastric Surgery," illustrated by films. English colleagues are cordially invited.

The annual general meeting of the Governors of the Imperial Cancer Research Fund will be held at the Royal College of Surgeons, Lincoln's Inn Fields, W.C., on Wednesday, April 22, at 2.30 p.m., when the chairman of the council, Prof. H. R. Dean, will present the thirty-ninth annual report and make a statement on the work of the Fund.

The Board of Registration of Medical Auxiliaries (B.M.A. House, Tavistock Square, W.C.1) has issued a third edition, dated March, 1942, of the orthoptic section of the National Register of Medical Auxiliary Services. This gives the names, addresses, and qualifications of orthoptists—i.e., persons who practise the development of binocular vision in cases of squint under the direction and control of an ophthalmic surgeon or a registered medical practitioner engaged in ophthalmology. Copies may be had from the acting secretary of the Board.

The Ministry of Health has issued as appendices to Circular 2578 schedules of the authorized equipment for: (1) first-aid posts and mobile first-aid units; (2) large mobile first-aid units; (3) gas cleansing stations; (4) first-aid points; (5) up-graded first-aid points; (6) ambulance satchels. Among the changes announced are the substitution of paraffin. moll. flav. for tannic acid jelly for the treatment of burns at first-aid posts, the omission of albucid soluble for the treatment of mustard-gas lesions of the eyes at first-aid posts and gas cleansing stations, and the gradual replacement of liq. cresol. sap. by liq. antisepticus.

Imperial Chemical (Pharmaceuticals) Ltd., a private limited company with a capital of £500,000 in £1 shares, has been formed as a subsidiary of Imperial Chemical Industries Ltd.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be sent to the Secretary.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Sterilizing Rubber Gloves

Dr. W. F. COOPER (Kingston-on-Thames) writes: Will some of your readers explain why rubber gloves are sterilized by heat at all, except in emergencies? Can they not be sterilized in fluids such as formalin, carbolic in acid or alkaline solution, any of the coefficient disinfectants, mercury chloride with a soap or saponin? A number of gloves could be kept in such solution and used as required; the cost would be trivial. The point is by no means so trivial as it seems.

"Keens"

Mr. F. R. WALTERS, F.R.C.S. (Farnham) writes: Mr. Maynard Heath may be interested to know that in Halliwell's *Dictionary of Archaic and Provincial Words* (6th ed., London, 1868) "keen-bitten" is given as a North of England term for frost-bitten.

Miss GWENDOLINE BOWES writes from Grange-in-Borrowdale, Keswick, in answer to Mr. P. Maynard Heath's inquiry: I have heard the word "keens" used locally, and find it and its fellow "kins" in Prévost's *Glossary of the Cumberland Dialect*, meaning "keen cuts, cracks in the hand caused by frost." I cannot trace its source of origin, but it is tempting to think it may have some connexion with "kibe," meaning chilblain, used in parts of Northern England—I have met it in Lancashire. According to *Webster's Dictionary* "kibe" (cf. Welsh "cibwst") means a chap or crack in the flesh caused by cold, an ulcerated chilblain, or a sore on the hoof of a horse or sheep. Perhaps another reader may be able to give proof of the relationship, if any, between keens, kins, and kibes.

Income Tax

Expenses: Schedule D

H. G.'s main source of income is a salary taxed under Schedule E; last year he received in addition some fees for consulting work. What expenses can he claim for the latter income, which, of course, is assessable under Schedule D?

*** The rules for both schedules require the expenses to have been incurred wholly and exclusively for the purpose of the profession or in carrying out the duties of the office. In addition the Schedule E rules require the expenses to have been "necessarily" so incurred. As a consequence, subscriptions to professional societies are deductible from earnings assessable under Schedule D, but where Schedule E rules apply only when membership of the society is a condition of the appointment. What other expenses are chargeable by H. G. against his consultation fees must depend on the particular facts. If, for instance, he has a consulting room set aside in his house some portion of the cost of rent, rates, lighting, etc., is allowable; also there may be some part of the cost of telephone, professional books, etc., allowable.

LETTERS, NOTES, ETC.

Appendix in Hernia

Dr. W. M. CHAPMAN (Shaftesbury) writes: Although one has frequently heard of the presence of the appendix in an inguinal hernia, I feel that the following case is of sufficient interest to merit some mention. The patient, a man aged 78, was admitted to hospital on January 26 with a history of having had a painful swelling in the right groin for two days. He had suffered from an easily reducible hernia for many years, which was normally kept in position by a truss. The normal rupture he described as being egg-shaped, but on this occasion it was rather elongated. There had been no sickness, and his bowels had opened normally that morning. His pulse and temperature were within normal limits. On examination the mass was "finger-shaped," was about three inches in length, and could be felt extending downwards from the external abdominal ring. The swelling was tense and extremely tender. There was no impulse on coughing, and the transillumination test was negative. An unsuccessful attempt at reduction was tried, and repeated again under gas-and-oxygen anaesthesia, but without result. At operation the sac of the hernia was found to contain an appendix about four inches long. The distal inch was acutely inflamed, and was bound to the opening of the sac by dense adhesions. The appendix itself contained a large faecal concretion, which presumably and fortunately did not allow its reduction. The neck of the sac was not unduly constricted, and I think it can be definitely stated that the inflammatory condition of the appendix was primary and not secondary to any constricting influence. The patient has made a quick and uninterrupted recovery.

The Teaching of Anatomy

Dr. C. E. S. FLEMMING (Westbury, Wilts) writes: In a leading article in the *Journal* of Dec. 3, 1932, appear the following sentences that are of interest now: "It is necessary to remember that it is a general practitioner that is being made, not a specialist—that specialist study can or should only be made after qualification. . . . What the medical service of the country wants first of all and all the time is a due supply of competent practitioners; whereas the schools, under the spell of the examination system, are training the student primarily for examination and incidentally for practice."

Corrigendum

In the letter by Dr. J. Price Williams on the teaching of anatomy (April 11, p. 479) the word "unless" was inadvertently changed into "when." The passage should read: "We stuff the innocent student's mind with 'BODFI' and its congeners, few of which can ever benefit him or his patients unless he becomes a specialist. . . ."